Update 2024/11/26 based on the upper bounds of approved guidance – visit the Investor Relations section of www.maregroup.it for more informations.

mare group®

INNOVATION
ATTITUDE

MARE GROUP | A DIGITAL ENGINEERING COMPANY

Mare Group is a digital engineering company that develops innovation with large companies, leveraging the same technologies to offer products and services for SMEs with a focus on digital and sustainability transition. The business has three main lines.

1. APPLIED ENGINEERING 28%

Advanced design and optimization of products, processes and infrastructures, leveraging cutting-edge enabling technologies to enhance innovation across manufacturing, transportation, aerospace, automotive and defense.

- Mechanical Design
- Process Engineering
- Industrial Automation
- Prototyping Services
- Predictive Maintenance
- Functional Testing
- Digital Twin & Simulation Services

VOP*: €45Mln

2. DIGITAL SERVICES 47%

Wide-ranging digital services and development encompassing products, cloud services, and digitalization for companies and processes of any size to empower businesses and maintain sustainable competitiveness.

- Cloud and Data Center
- Cybersecurity
- Business Intelligence
- Data Mining and Data Analysis
- Digital Transformation
- Big Data
- AI

3. TECHNOLOGY PLATFORMS 25%

Development or acquisition of proprietary technology as a foundation for new products and Platform evolution.

XR LINE Delfi.ai SYPLA PLATFORM

* based on the upper bounds of approved guidance – visit the Investor Relations section of www.maregroup.it for extended data

16 OFFICES IN **4** COUNTRIES

SOURCE: COMPANY DATA AS OF JUNE 2024

ISO 9001:2015 Sistema di Gestione per la Qualità

ISO 14001:2015 Sistema di Gestione Ambientale

ISO/IEC 27001:2022 Sistemi di Gestione per la Sicurezza delle Informazioni

ISO 45001:2018 Sistemi di gestione per la salute e sicurezza sul lavoro

UNI/PdR 125:2022 - Sistema di Gestione per la Parità di Genere

EN 9100:2018 - Sistema di Gestione per la Qualità nel settore Aerospace

IQNET – Certified - Accordo fra Organismi Certificatori a livello Internazionale

Esma – European Securities and Markets Authority

	358	**337**	**21**
	16	**10**	**5**

56% GRADUATES

2001

ORIGINS:
TEST SIMULATION

2010

EVOLUTION:
DIGITAL TWIN

2015

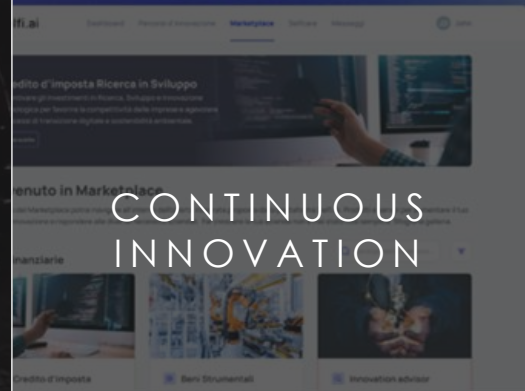
INDUSTRY 4.0 &
TECHNOLOGICAL
HUMANISM

2017-2023

11 M&A
+
INTEGRATION

2024

Delfi.ai



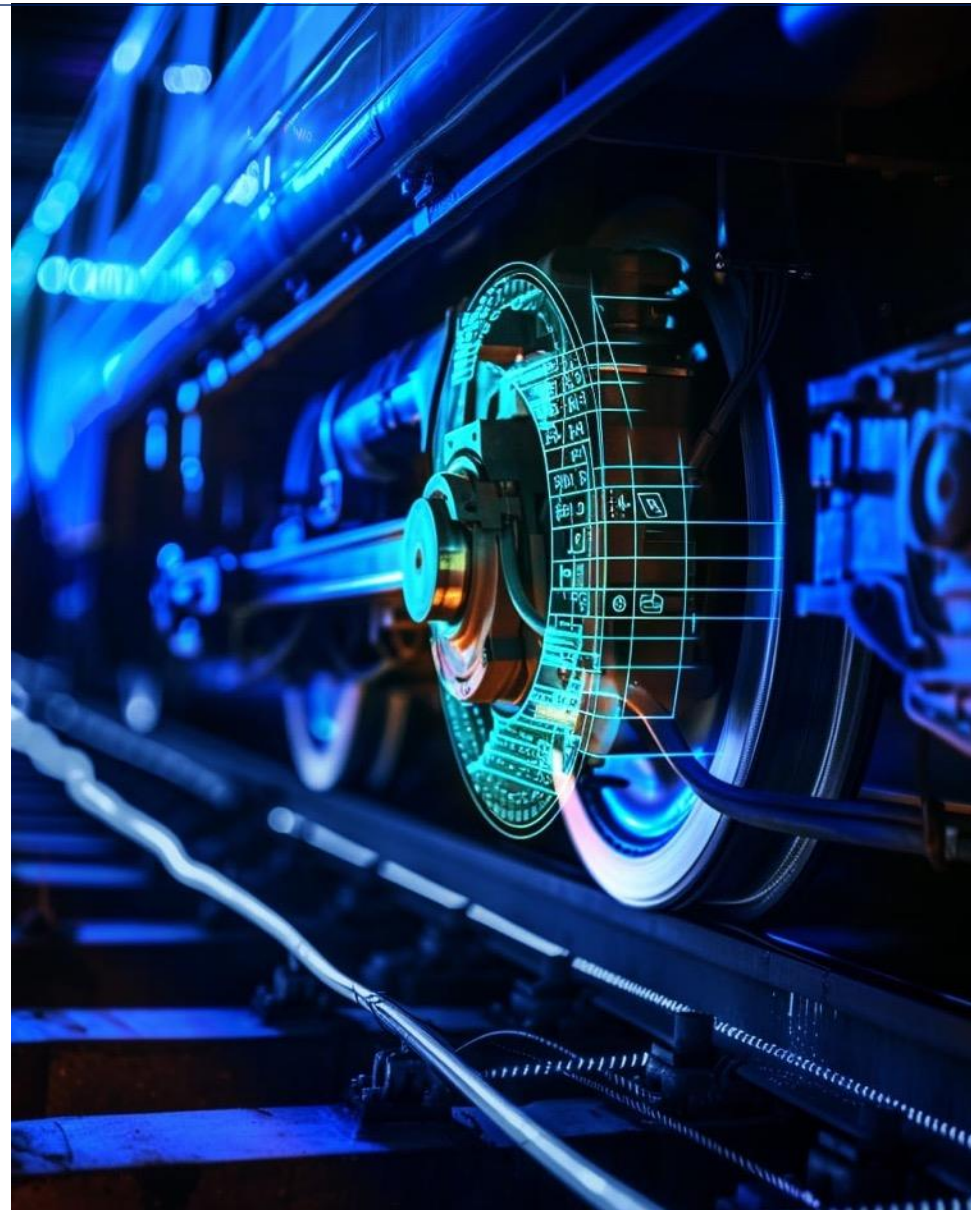
CONTINUOUS
INNOVATION

Proprietary Platforms

From the Technology by Syenmaint, SAX is Smart device mounted on passenger trains for real-time infrastructure monitoring, significantly reducing maintenance costs

Patent n. 102020000029402 | EU extension n. EP21209879.2 | Hong Kong Extension n. 42022064772.1

SECTOR	Railway infrastructure
CUSTOMERS	AlmavivA S.p.A. | EAV s.r.l. | Titagarh Firema S.p.A. | Ferrovienord S.p.A.
PRODUCT TYPE	Smart Sensors
OPPORTUNITY	With the growing focus on **safety**, infrastructure monitoring and predictive maintenance are increasingly relevant.
ISSUE	Monitoring an **extensive rail network** demands considerable investment and faces environmental challenges.
SOLUTION	Mare Group's innovative **smart axle**, fitted onto **regular passenger trains**, provides efficient **railway monitoring**, drastically cutting costs without the need for nightly track inspections by dedicated trains.



XR LINE

The suite is used in many applications with large industrial companies, especially operating in manufacturing sector.

INDUSTRY	Large Industrial Companies
CUSTOMERS	Stellantis N.V. | Leonardo S.p.A. | The Coca-Cola Company Marelli Europe S.p.A. | Comau S.p.A. | LEONARDO | TASI
PRODUCT TYPE	Virtual reality training with Authoring System.
OPPORTUNITY	Virtual training has been demonstrated to be highly effective, offering significant reductions in time and costs while enhancing outcomes.
PROBLEM	Creating new training procedures and environments is normally **very expensive** and requires **specialized developers**.
SOLUTION	Mare Group's XR Line empowers clients to autonomously develop virtual training environments. Customers can effortlessly construct procedures and assessments without the need for specialized development skills.

→ **DELFI.AI:**

- The Artificial Intelligence for Small and Medium-sized Enterprises (SMEs)

→ **Key features:**

- Analysis of the company through VAT number
- Reports on innovation and positioning in the competitive landscape
- Identification of expected benefits and mapping of the innovation path

→ **Online procedure**:

- Selection of the most interesting opportunities
- Receiving a personalized offer
- Signing the contract

→ **Marketplace:**

- Host offers from Mare Group and third parties
- Continuous improvement as the database grows

→ **Related Products**

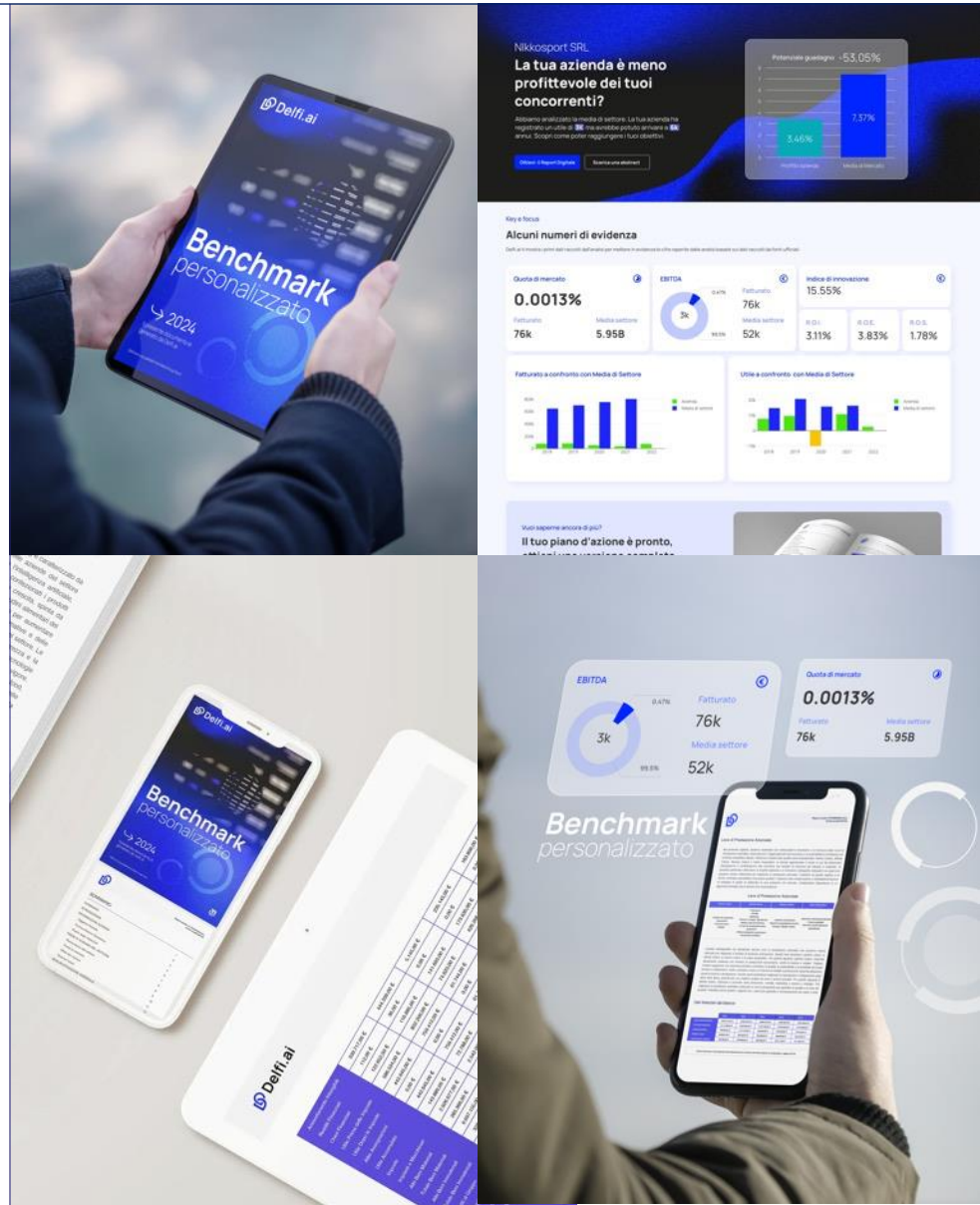
- Marker (marketing and competitive analysis)
- Obiettivo Europa (n. 1 public founding scouting platform in Italy)
- Manufacturing and Design Process services and products

→ **After-sales support:**

- Implementation in business processes
- Stimulation of further purchases in complementary areas

→ **Future of DELFI.ai:**

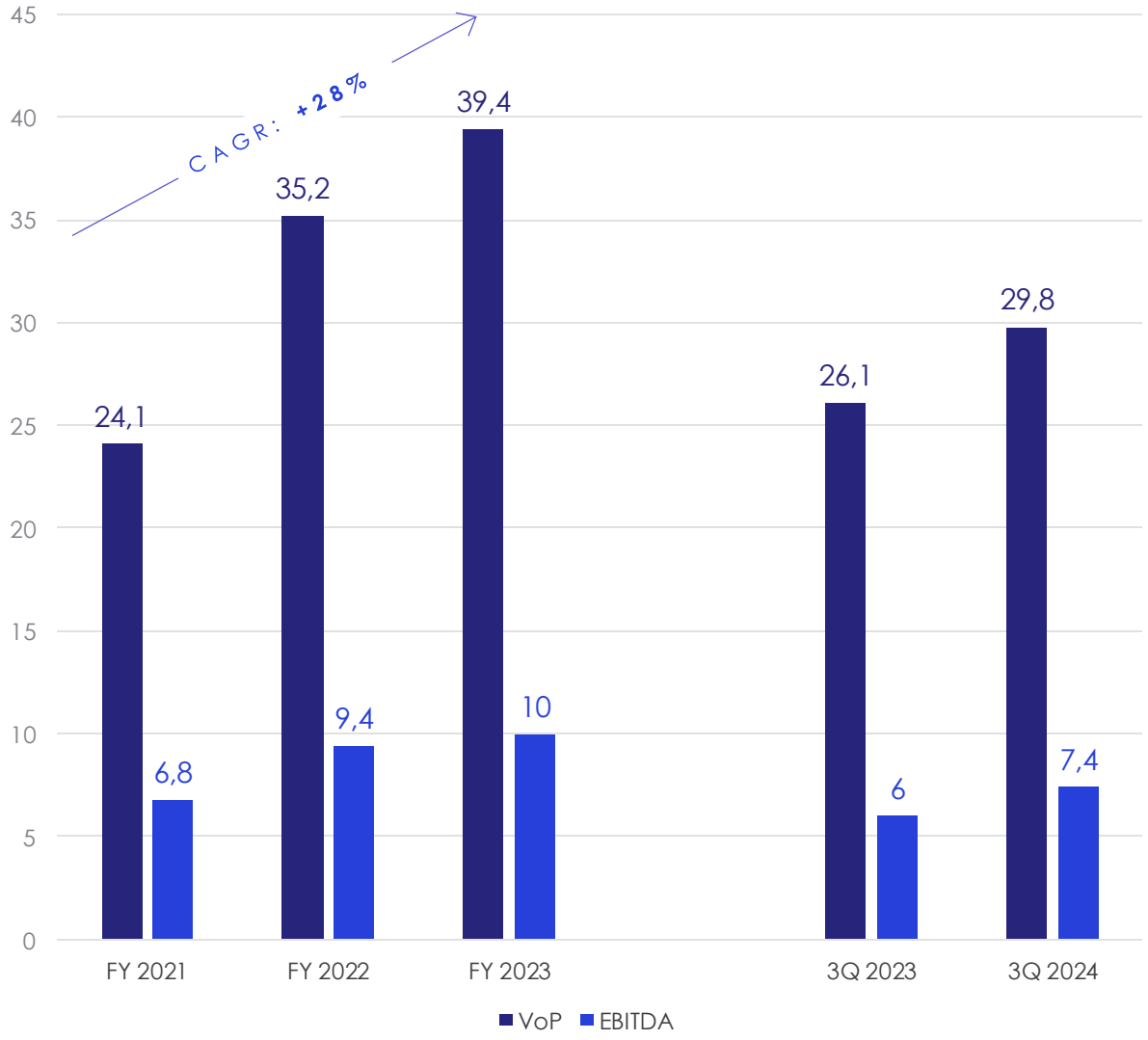
- Integration of other tools
- Evolution: **Virtual Client Advisor**



FINANCIAL HIGHLIGHTS

FINANCIAL DATA (€M)

SOURCE: COMPANY DATA



KEY HIGHLIGHTS

- YoY growth across all KPIs
- Increased Margins and Net Profit
- External Cost Structure Optimized
- 2021-2023: 40% organic growth
- 2024: 100% organic growth

Note:

Historically, revenue and margins tend to further accelerate in the second half, with notable growth in the last quarter.

MARE GROUP | FUTURE CONTINUOUS – GUIDANCE FY2024

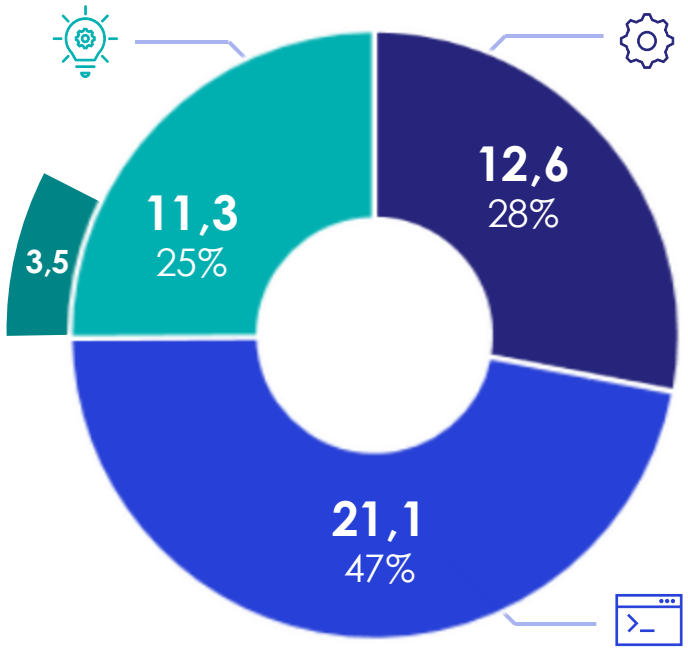
	2024*	YOY	2023
VALUE OF PRODUCTION	42-45 €Mln	+14%	39 €Mln
EBITDA	13-14 €Mln	+40%	10 €Mln
NET FINANCIAL POSITION	14 €Mln	-12 €Mln	26 €Mln
NFP / EBITDA	1,0x		2,5x

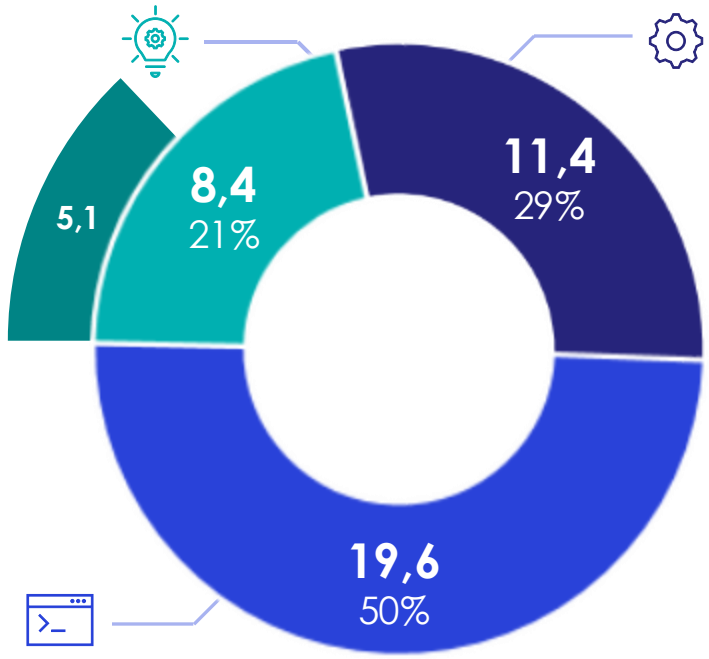
APPLIED ENGINEERING

DIGITAL SERVICES

TECH PLATFORMS

TECH P. INVESTMENTS





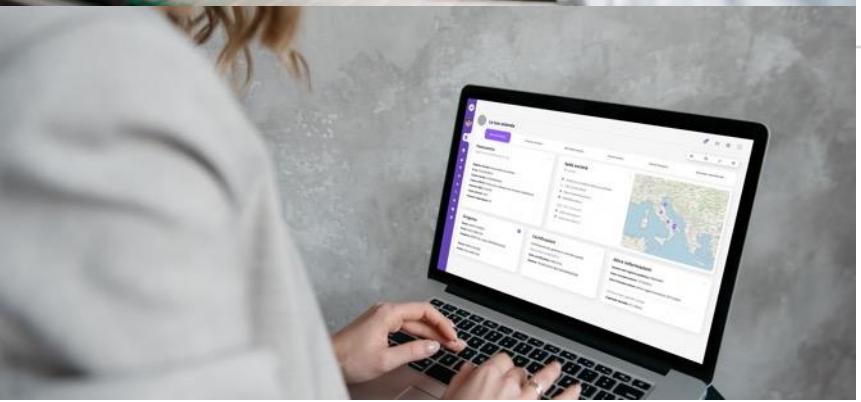
* 2024 figures based on the upper bounds of approved guidance visit the Investor Relations section of www.maregroup.it for extended data

BUSINESS AND TECH

CLIENTS

PARTNERS
ORGANIZATIONS

PARTNERS
COMPANIES



mare consulting

mare digital

mare industrial

OFFER

STRATEGY AND INNOVATION FOR SMES

- Innovation Projects
- Organization Development
- Digital Transformation
- Technological Innovation
- IP Management
- Brand & Business Value
- R&D Support
- PNRR

DIGITALIZATION FOR BUSINESSES AND PA

- Software Development
- Entry-Level Digitalization
- Artificial Intelligence
- Virtual Training
- Remote Support
- Virtualization
- Digital Services and Security
- Metaverse
- Quality Control

ENGINEERING FOR MANUFACTURING

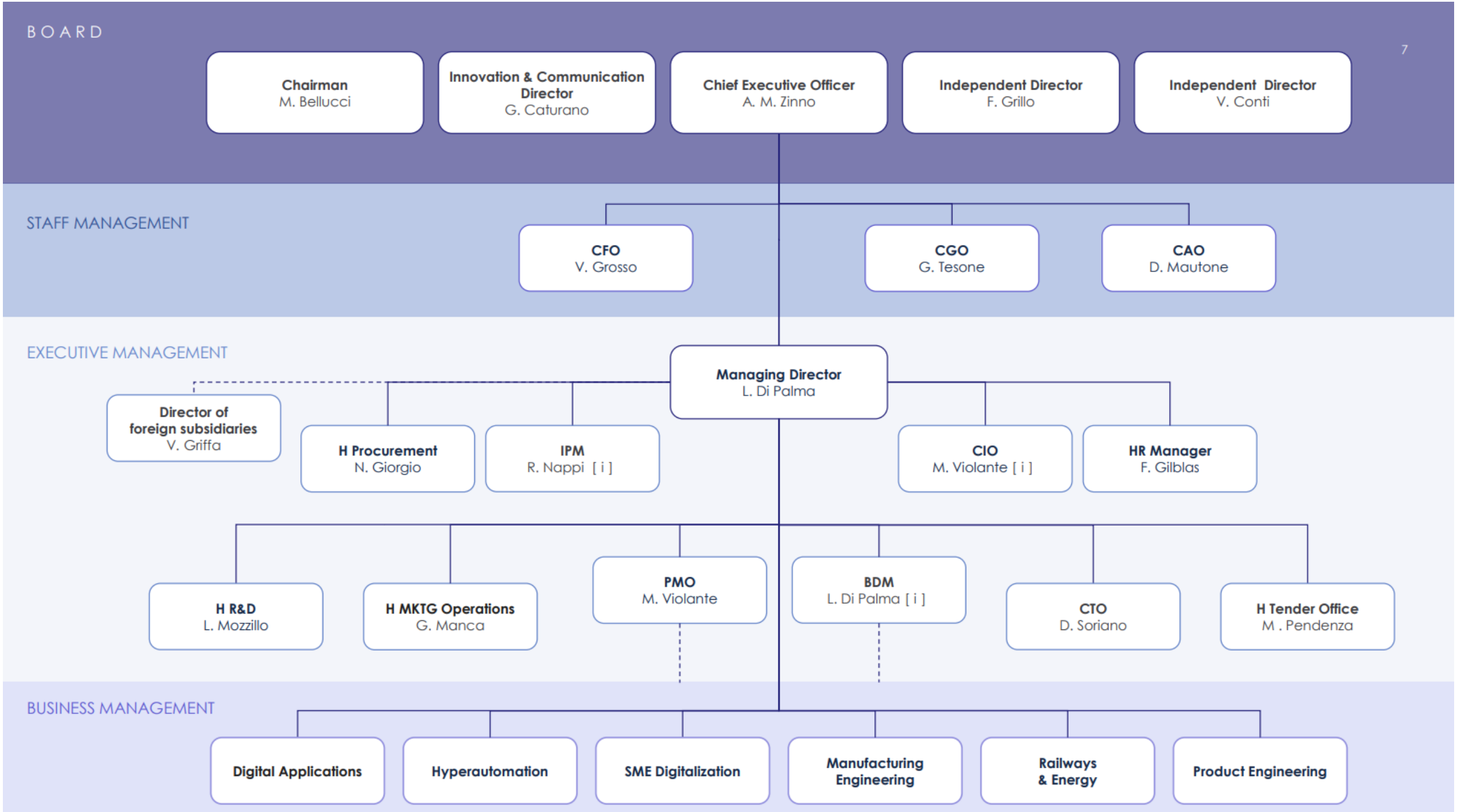
- Design and development of structures and subsystems
- Design and optimization of manufacturing processes
- Logistics Engineering and
- Supply Chain Management
- Predictive Maintenance
- Dynamic and integrated management of maintenance cycles
- Optimization of energy costs of processes and systems

SPECIALIZATION

- R&D Tax Credit
- Industry 4.0
- Training 4.0
- Marketing 4.0
- Patent Box

- Extended Reality
- Deep Learning
- IoT
- Big Data
- Computer Vision

- CAD, CAE and CAM technologies
- Virtual Simulation and DMU
- Reverse Engineering Rapid prototyping
- Sypla Industry 4.0
- Sypla Energy
- Sypla Rail, SAX


BOARD
Chairman
M. Bellucci
Innovation & Communication Director
G. Caturano
Chief Executive Officer
A. M. Zinno
Independent Director
F. Grillo
Independent Director
V. Conti
STAFF MANAGEMENT
CFO
V. Grosso
CGO
G. Tesone
CAO
D. Mautone
EXECUTIVE MANAGEMENT
Managing Director
L. Di Palma
Director of foreign subsidiaries
V. Griffa
H Procurement
N. Giorgio
IPM
R. Nappi [i]
CIO
M. Violante [i]
HR Manager
F. Gilblas
H R&D
L. Mozzillo
H MKTG Operations
G. Manca
PMO
M. Violante
BDM
L. Di Palma [i]
CTO
D. Soriano
H Tender Office
M . Pendenza
BUSINESS MANAGEMENT
Digital Applications
Hyperautomation
SME Digitalization
Manufacturing Engineering
Railways & Energy
Product Engineering

DIGITAL SERVICES

INTEGRATED OFFERING MARE DIGITAL

- XR (extended reality)
- Software development
- Remote support
- 3D Virtualization
- Managed services
- Artificial intelligence
- IoT
- Big Data
- Computer Vision
- ERP
- Business intelligence
- System integration soc

SUPPLY CHAIN MARE DIGITAL

- Intent S.p.A. 400k/year
- Netgroup S.p.A. 120-130k/year
- Ntd italia s.r.l. 150k /year
- M56k s.r.l. 100k /year
- 15 other suppliers <50k

EXPERTISE

MARE DIGITAL

MAIN PROJECT

- IWS
- SUPPLIER PORTAL
- AI USE CASE
- EDF PROPOSAL

INTEGRATED OFFERING MARE DIGITAL

- XR (extended reality)
- Software development
- Remote support
- 3D Virtualization
- Managed services
- Artificial intelligence
- IoT
- Big Data
- Computer Vision
- ERP
- Business intelligence
- System integration soc

SUPPLY CHAIN MARE DIGITAL

- Intent S.p.A. 400k/year
- Netgroup S.p.A. 120-130k/year
- Ntd italia s.r.l. 150k /year
- M56k s.r.l. 100k /year
- 15 other suppliers <50k

EXPERTISE

IWS

GROUND CONTROL STATION

The IWS project involves the supply and integration of equipment for setting up a control room in the railway sector. This solution has been successfully implemented in high-profile projects such as the Copenhagen Cityringen Metro, Aarhus Light Rail, Lima Metro Line 2, and Riyadh Metro Line 3.

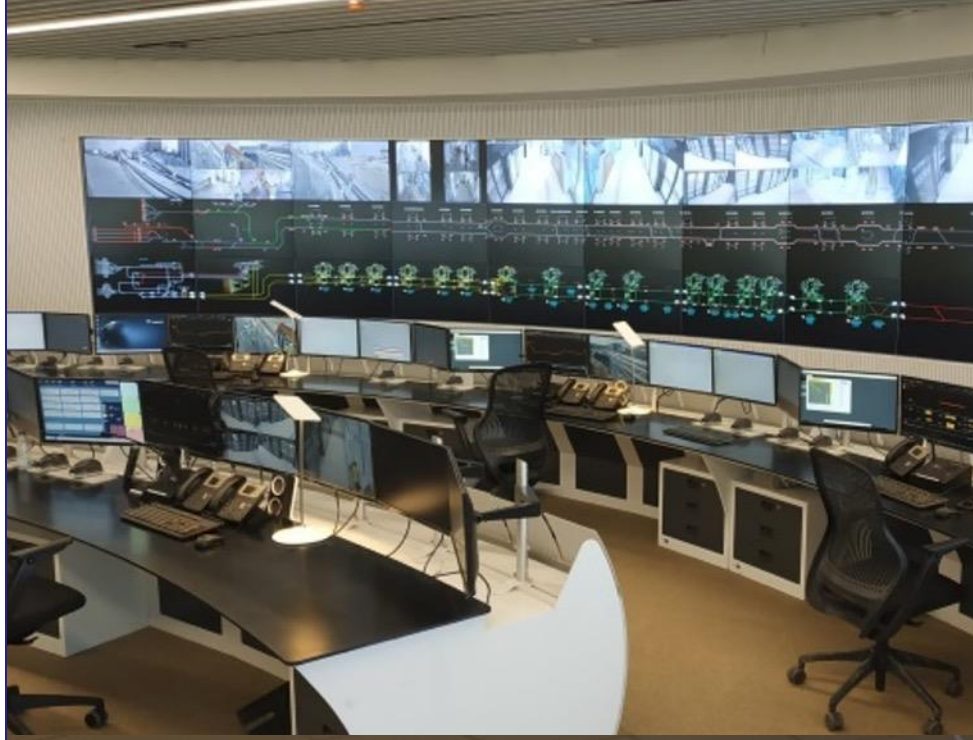
PROJECT OBJECTIVES

- Optimize operational efficiency
- Ensure safety and operational continuity
- Facilitate interchangeability and flexibility

KEY FEATURES

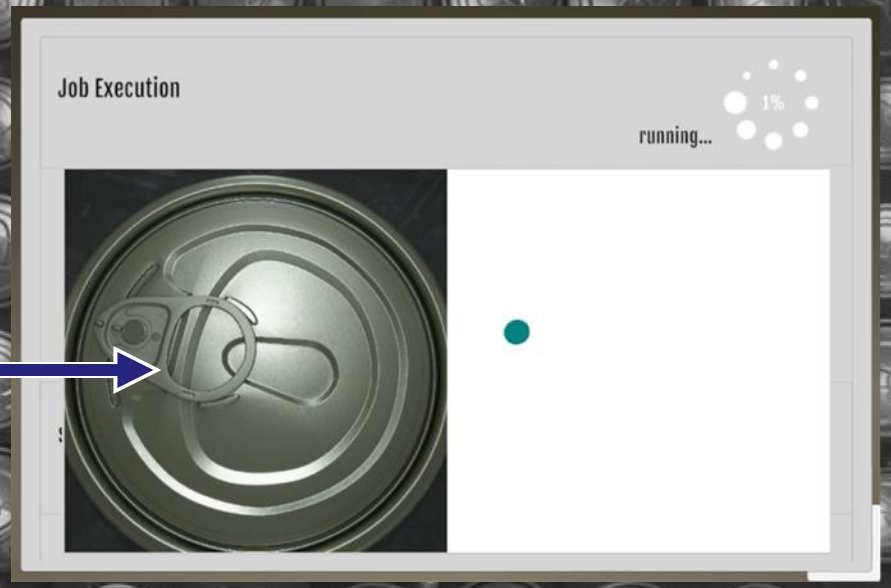
- Remote control of active equipment
- Interchangeability of operator workstations
- Single Sign-On/Sign-Off

CLIENT HITACHI Inspire the Next



MANUFACTURING: Generation of 15.000 synthetic images

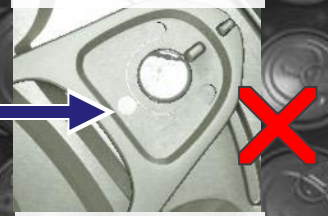
STANDERD CAD FILE
USED BY
MANUFACTURER



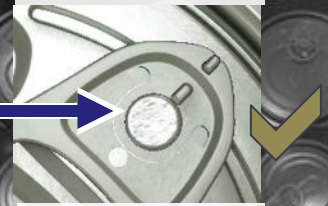
15.000 GENERATED PHOTOREALISTIC IMAGES, WITH AND WITHOUT ANOMALIES.

AI TRAINED AUTOMATICALLY.

DEFECTIVE



#1 / 15.000



COMPLIANT

ACTUAL TEST IN OPERATION ON CONVEYOR BELT:

ACTUAL SAMPLE ON CONVEYOR BELT

INNOIDA RESPONSE

SETUP

Images Generated:	15.000
Real photos:	0
Total time:	4 hrs
Hardware Cost:	< 200$

OPERATION

Inference Time:	120ms*
Accuracy:	99%

*10x faster than human

Quality control in production

- Synthetic datasets allow for resolving instability issues in defect detection (bias, reflections, noise, etc.)
- AI technologies in production require a large amount of data because the tasks of interest are particular
- A 3D model of the object is placed in a virtual environment where images are captured to collect unbiased datasets (effectiveness)
- Annotations are not necessary (efficiency)

innoida

Camera

Interna (PC) USB2.0 PC CAMER

Esterna http://10.70.51.56:8080/stream

File assets\Video\sample.mp4

Model

Rivetto

rivetto_best.onnx

NORMALE,ANOMALO

Start Stop

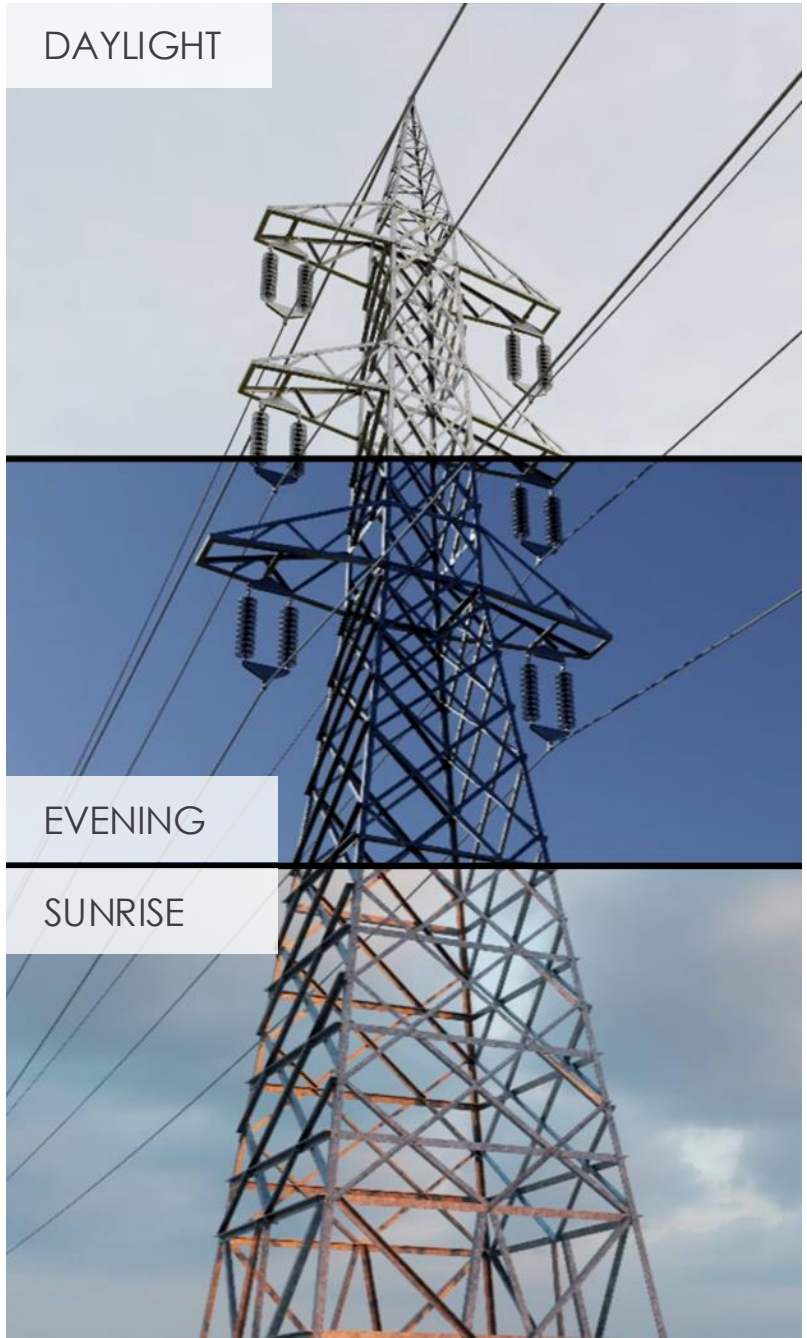
Last image grabbed processing time (ms): 33

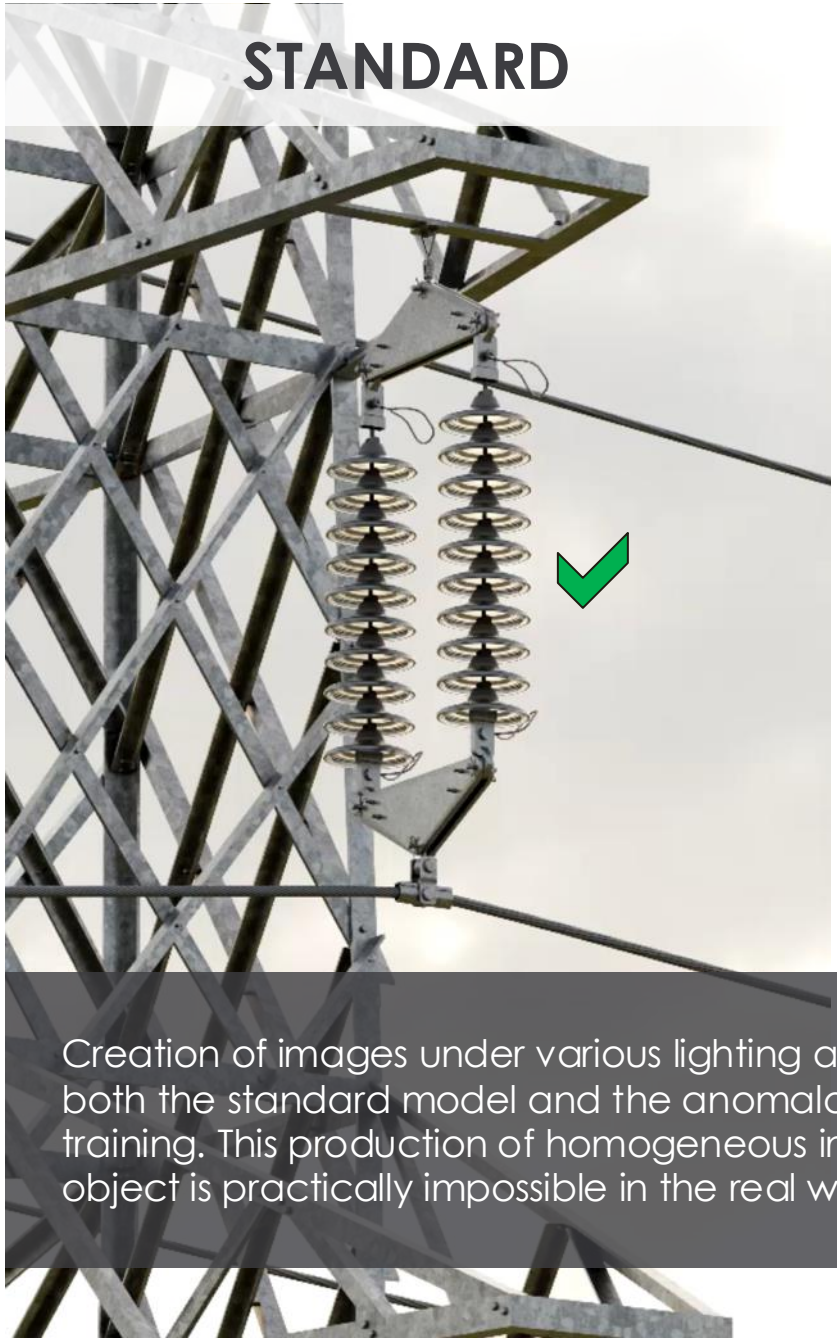
skipped frame: 9203

Processed frame: 4838

Last inference time (ms): 115

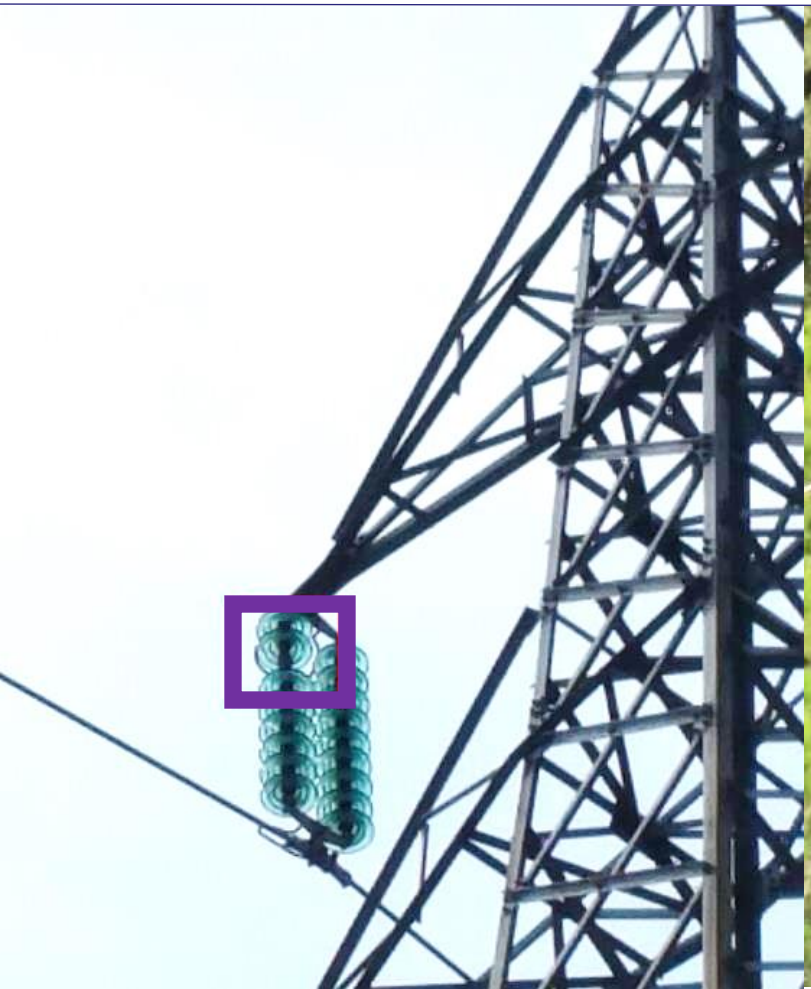
EXAMPLE OF INFRASTRUCTURE: ALL IMAGES ARE SYNTHETIC

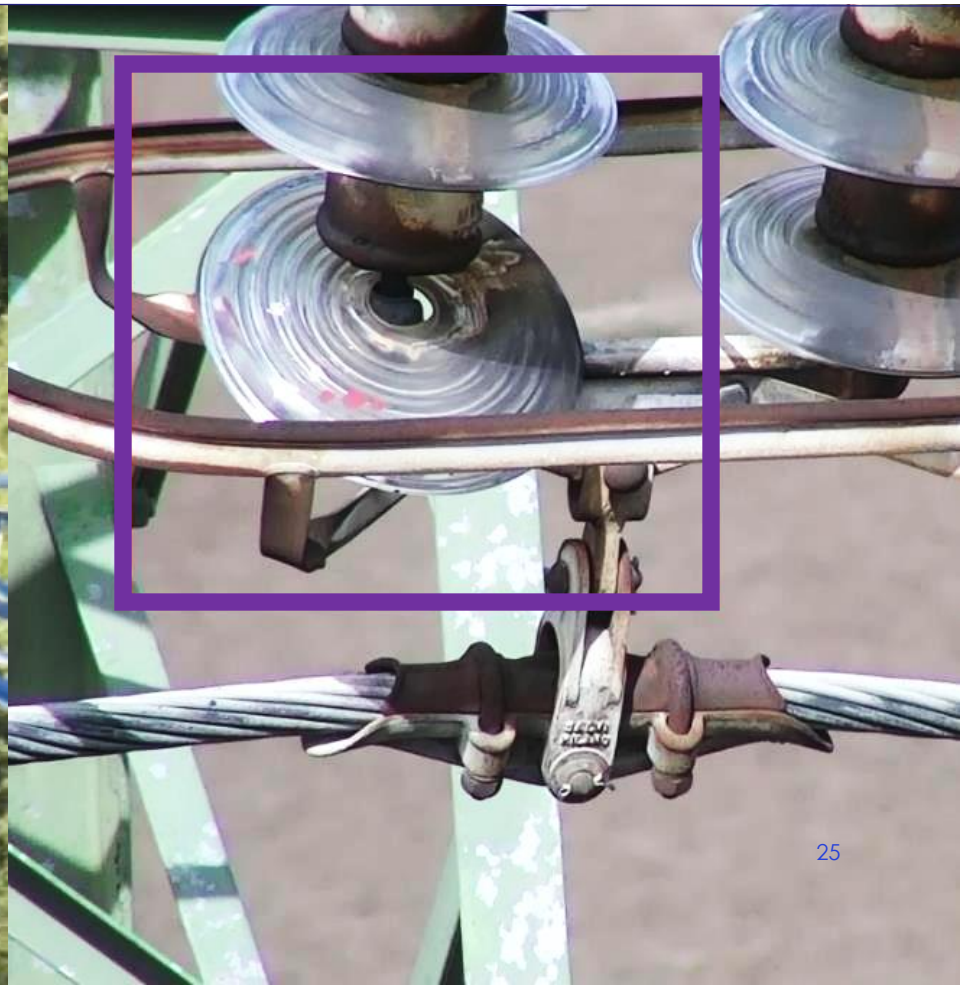


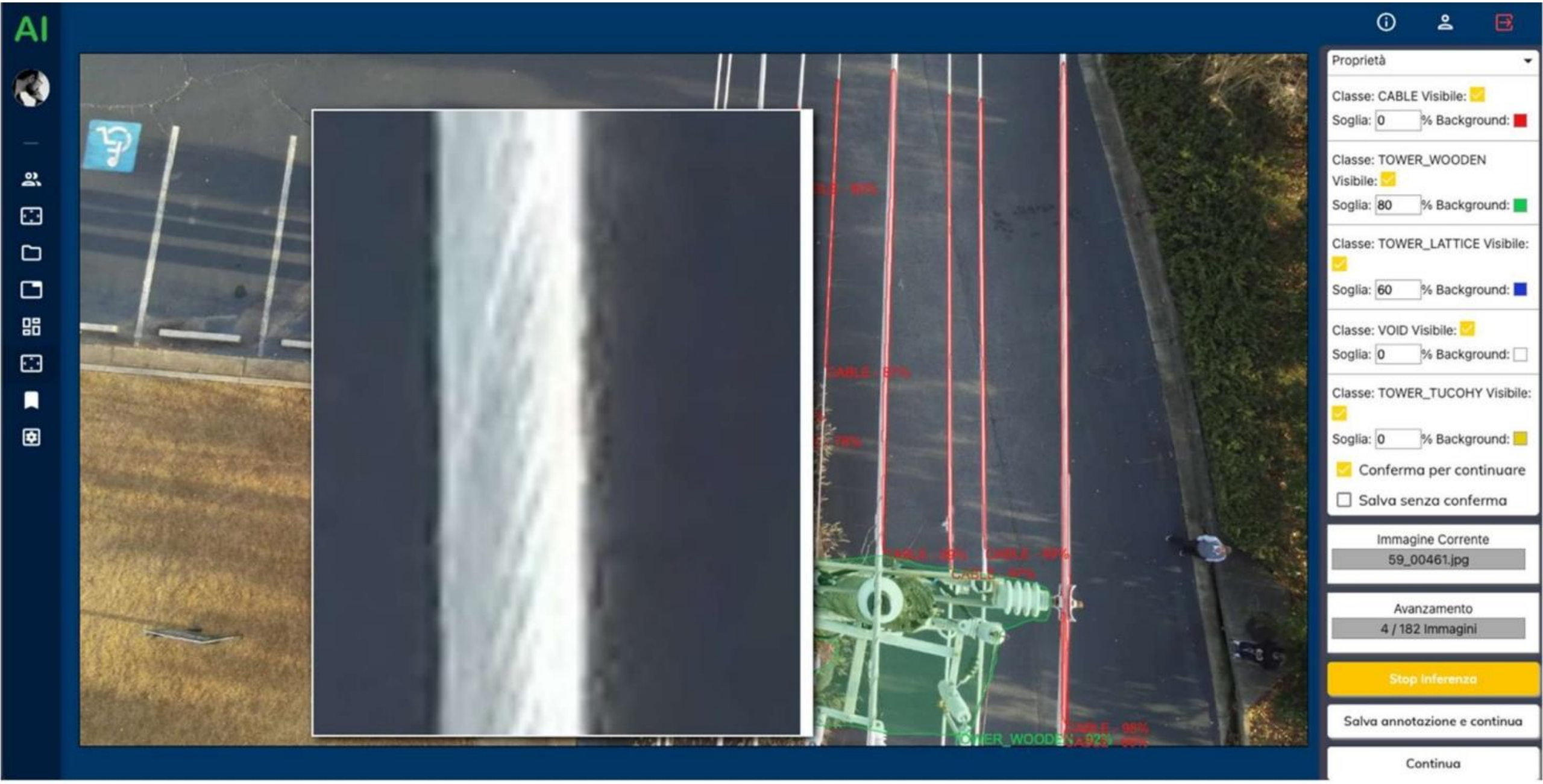


Creation of images under various lighting and environmental conditions, producing both the standard model and the anomalous one, thus providing ideal material for AI training. This production of homogeneous images with different versions of the same object is practically impossible in the real world, especially in the infrastructure sector.

EXAMPLE OF INFRASTRUCTURE: ALL IMAGES ARE SYNTHETIC






AI
Proprietà
Classe: CABLE Visibile:
Soglia: 0 % Background:
Classe: TOWER_WOODEN
Visibile:
Soglia: 80 % Background:
Classe: TOWER_LATTICE Visibile:
Soglia: 60 % Background:
Classe: VOID Visibile:
Soglia: 0 % Background:
Classe: TOWER_TUCOHY Visibile:
Soglia: 0 % Background:
Conferma per continuare
Salva senza conferma
Immagine Corrente
59_00461.jpg
Avanzamento
4 / 182 Immagini
Stop Inferenza
Salva annotazione e continua
Continua

DEBORA

DEFECT AI-BASED ELABORATION FOR ELECTROMYOGRAPHIC NEEDLES ASSEMBLY

DEBORA (Defect AI-based Elaboration for Electromyographic Needles Assembly) is a project under the KITT4SME initiative of the Horizon 2020 program, aimed at facilitating the adoption of AI by SMEs. We developed a control station for quality control of electromyographic needles.

PROJECT OBJECTIVES

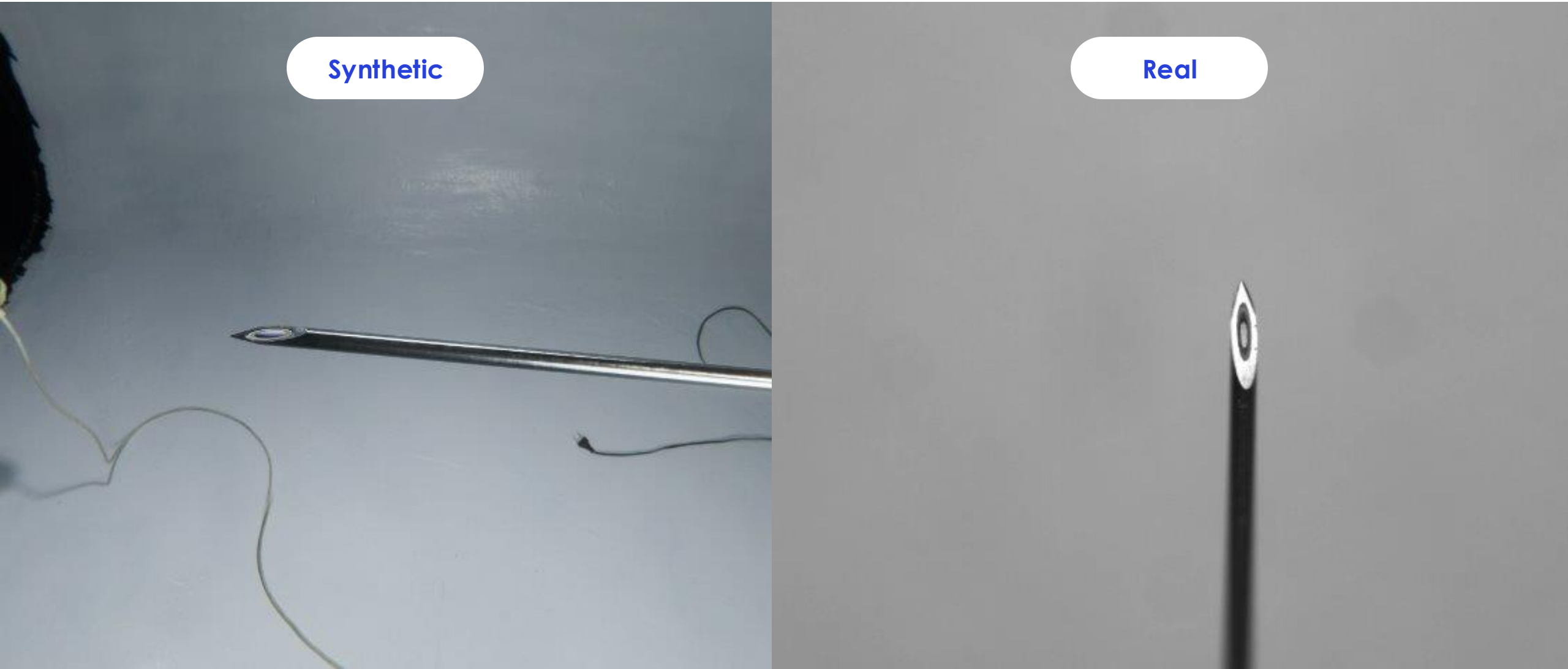
- Improve defect detection accuracy
- Ensure consistent needle quality
- Automate the inspection process
- Enable easy AI adoption for SMEs
- Enhance human-robot interaction

FEATURES

- AI-based defect detection
- Model training based on synthetic data generation
- Better accuracy than human operator (90%)

CLIENT spes medica

Quality control in production | Assembly of electromyographic needles



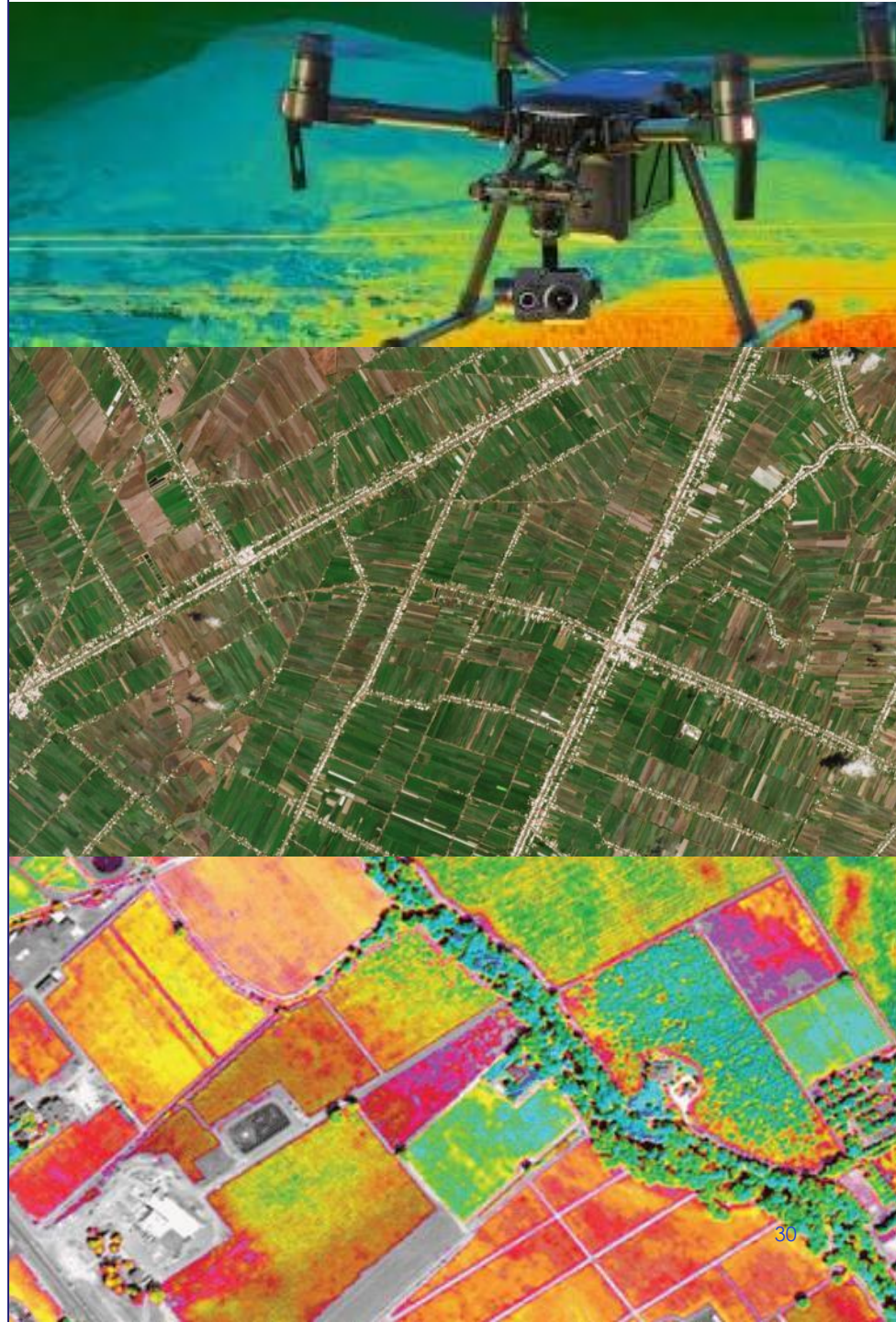
TERRITORIAL AGRICULTURE
(MIPAAF PROPOSAL)

DEVELOPEMENT GLOBAL MONITORING PLATFORM

The project aims to develop a platform capable of monitoring agriculture production health and distribution through advanced technologies, including AI, remote sensing, and data integration. This platform will support the national and European agricultural value chain by improving crop quality and quantity, mitigating meteorological risks, and providing comprehensive monitoring capabilities.

- **Geo-Localization of Agricultural Fields**: Identifying and mapping agricultural fields using satellite and aerial images.
- **Crops' Health Management**: Monitoring the health of crops to detect stress, diseases, and pest infestations.
- **Meteorological Influence and Risk Mitigation**: Assessing the impact of weather conditions on crops and predicting potential risks.
- **Clustering of Agricultural Crops**: Grouping crops based on various characteristics for better management and analysis.
- **Surface Extension Estimation**: Providing accurate measurements of crop field sizes.
- **Data Integration**: Combining NDVI data with other data sources such as weather and soil data for a holistic view of crop conditions.

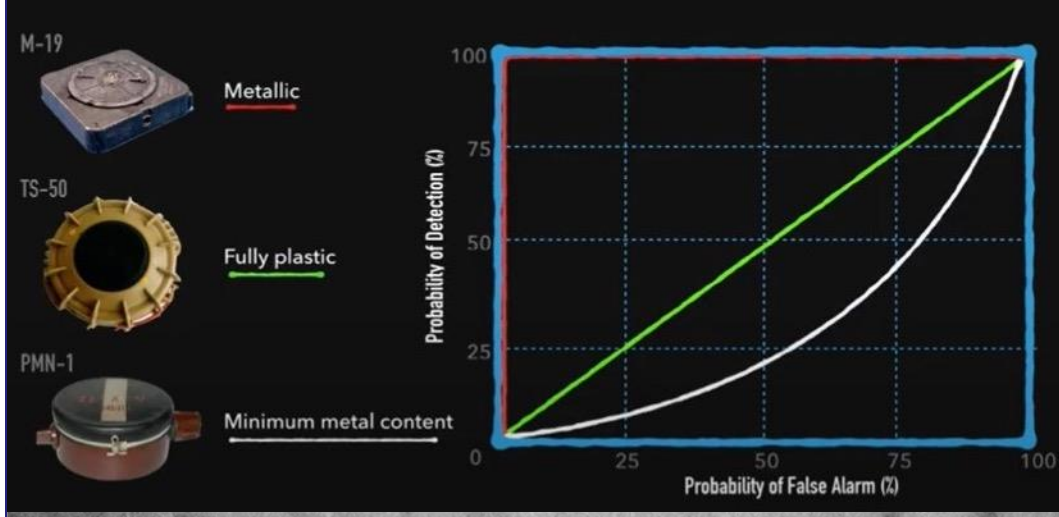
TECHNOLOGY

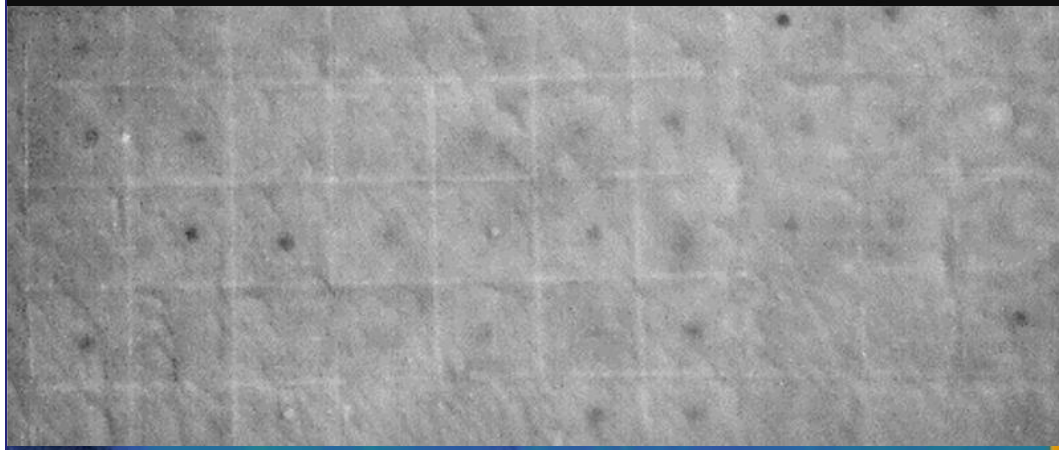


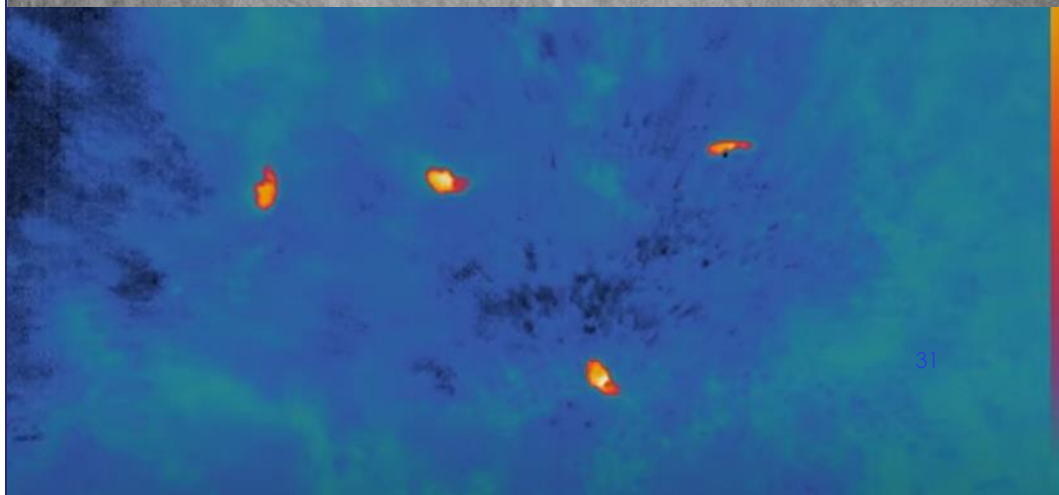
DEMINING WITH UAV
(EDF PROPOSAL)
AND MULTI-SENSOR APPROACH THROUGH AI CLASSIFICATION

- The project focuses on using UAVs (drones) and a multi-sensor approach for mine detection, employing advanced AI classification techniques. It is crucial to know the type of target to design an effective system, as a general-purpose system cannot be created for all situations.

- **Importance of Knowing the Target Type**: Designing a demining system requires precise definition of the type of mine to be addressed.
- **Metal Detector Accuracy**: Analysis of the metal detector's accuracy and its limitations.
- **Classical Analysis with Dual Sensors (GPR + Metal Detector)**: The analysis depends on the dielectric properties of the soil and mines, the depth of the target, and the shape of the reflection.
- **Limitations of Dual Sensors**: Need for calibration, difficulty in use on uneven terrain, and limited effectiveness in clay soils.
- **AI Approach**: Automatic analysis and classification of specific targets, general anomaly detection, integration of multiple sensors, and multivariate analysis to improve accuracy.







TECHNOLOGY

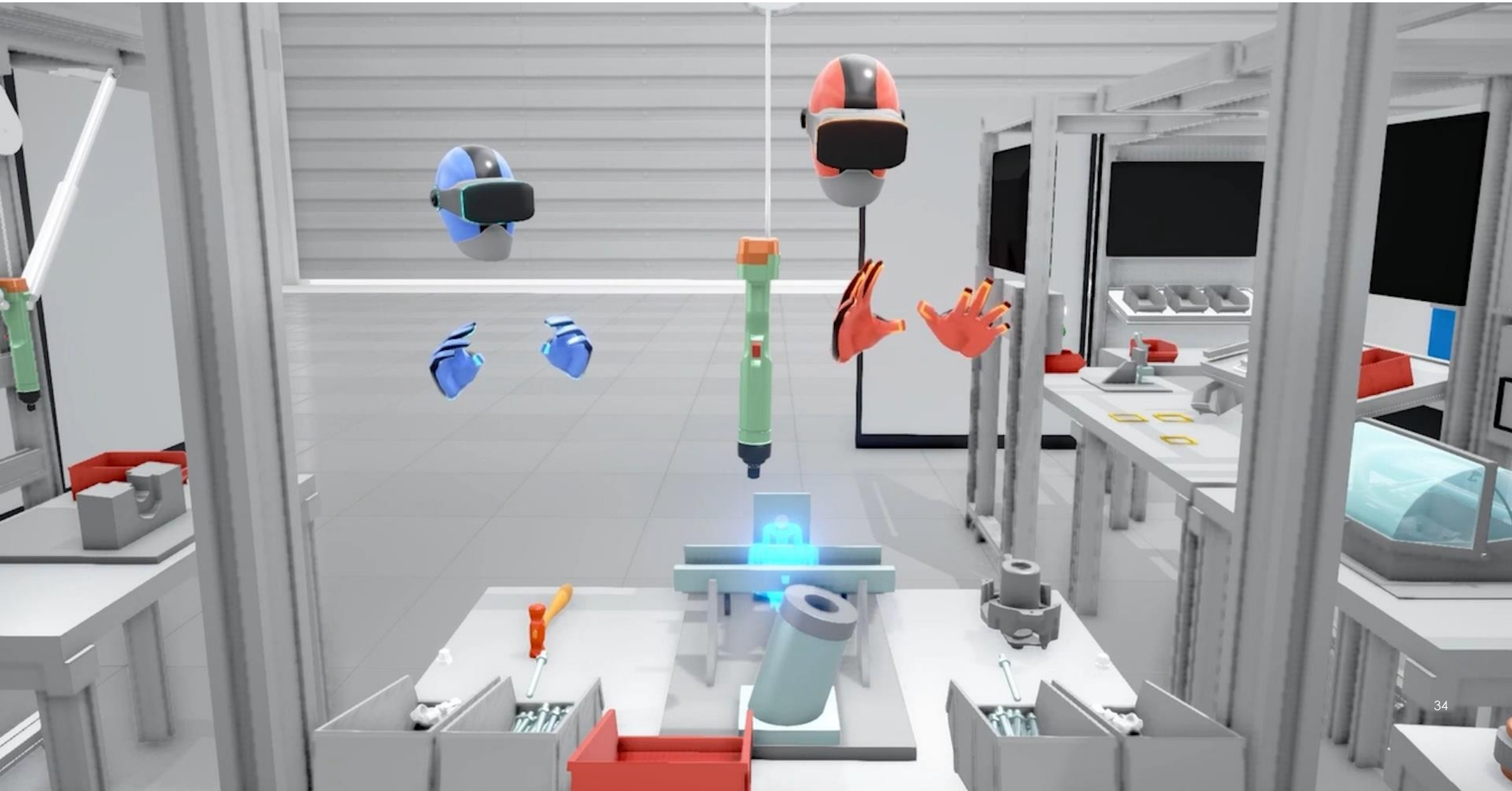
MULTISPECTRAL SENSORS (PARROT SEQUOIA)
THERMAL SENSORS (FLIR VUE PRO)
GPR ANTENNA (GROUND PENETRATING RADAR)
NVIDIA JETSON AGX XAVIER SERIES FOR AI PROCESSING

Multi-aperture Radar
(PNRM PROPOSAL WITH LEONARDO)

Predictive maintenance applied to Multi-aperture Radar

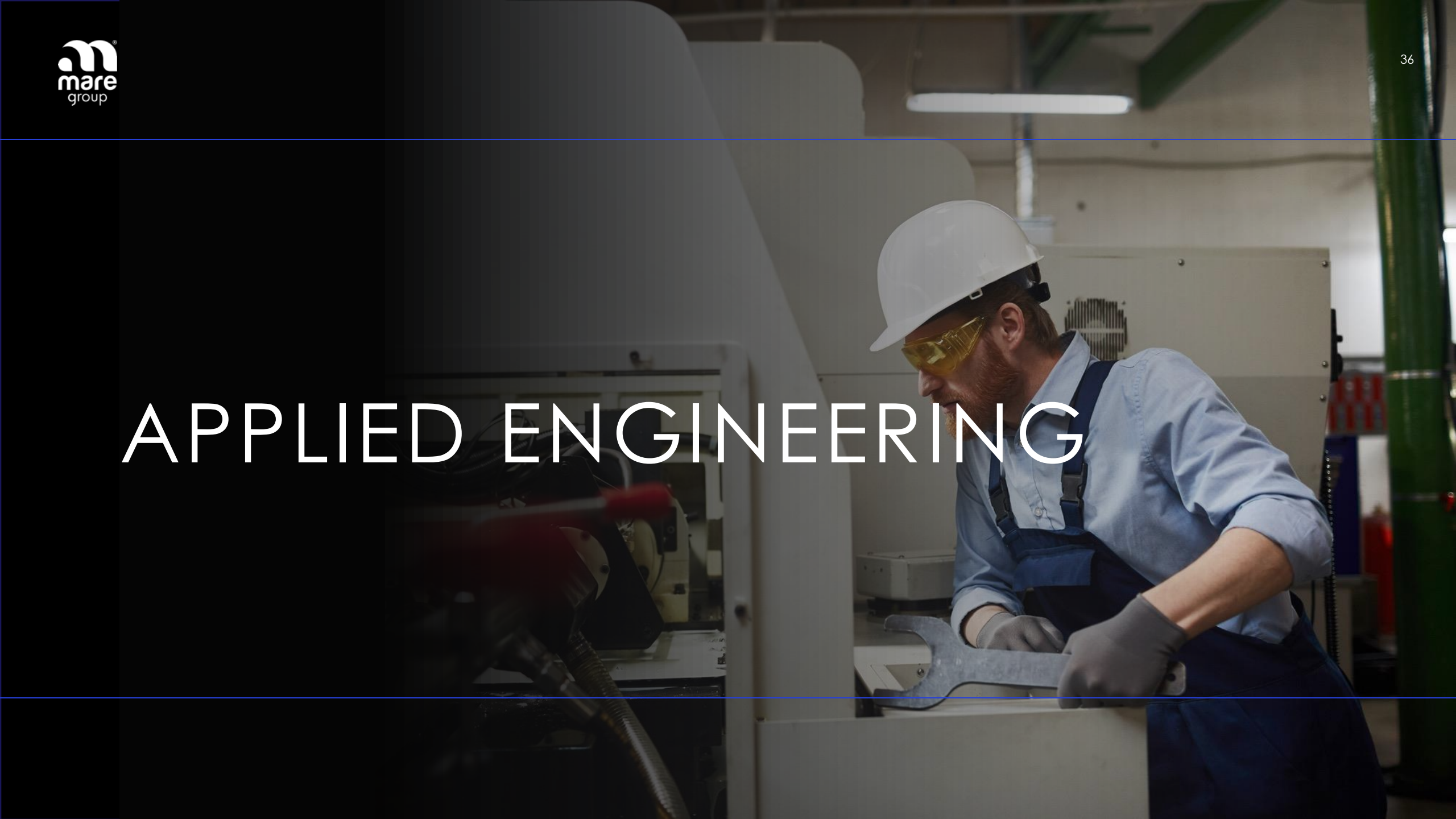
PRODUCT

XR LINE



XR LINE: GLOBAL TRAINING PLATFORM FOR FIRE FIGHTERS (POLO STRATEGICO NAZIONALE, PSN)

APPLIED ENGINEERING



INTEGRATED OFFERING

MANUFACTURING ENGINEERING

- Product Feasibility
- Time & Methods Equipments Definition
- Tolerance Stack-up Analysis & Vsa
- Digital Manufacturing
- Jigs & Fixture and Equipment
- Logistic engineering
- Supply Chain management

ENGINEERING ANALYSIS AND SIMULATION

- System Requirements Analysis & Specification
- Cold and hot structure analysis and optimization
- Impact/Crash analysis
- Durability/Fatigue analysis
- Aerodynamic analysis
- Kinematic analysis
- Numerical-experimental correlation
- System and subsystem V&V
- Test Specifications & Execution, test reporting and troubleshooting
- Traceability Management
- RAMS Life Cycle Management & Risk Analysis
- FTA/FMEA/FMECA

PRODUCT DESIGN

- Preliminary and detail design
- Metal and composite structures
- Configuration management
- Digital Mock-Up (DMU)
- Subsystem integration
- Design Optimization
- Reverse Engineering

PREDICTIVE DIAGNOSTICS

- Installation Design
- Safety Analysis
- Operation Management
- Maintenance Management
- Lice Cycle Management
- Data Analytics Management
- Calibrations & Metrological Characterization

SUPPLY CHAIN MARE INDUSTRIAL

- Sòphia High Tech s.r.l. 100k
- Dream Innovation s.r.l. 50k
- UST Italia s.r.l.s. 50k
- Project lab s.r.l. 40k
- Auxilio lab s.r.l. 20k
- Around You Communication s.r.l.s. 15k
- PowerFlex s.r.l. 60k
- R3 elettronica s.r.l. 30k
- GOMA elettronica S.p.A .20k

EXPERTISE

MARE GROUP

APPLIED ENGINEERING

PROJECTS & EXPERTISE

- DIGITAL FACTORY & DIGITAL TWIN
- AEROSPACE SYSTEM ENGINEERING AND DESIGN
- WIND TUNNEL MODEL DESIGN
- AIRCRAFT MAIN AND SUBSIDIARY SYSTEM DESIGN
- CONDITION BASED AND PREDICTIVE MAINTANENCE

TASI: DIGITAL TWIN WHITE ROOM TIBURTINA - REALTIME MODEL

ALFAROMEO 4C INTEGRATION ON MASERATI LINE

DIGITAL FACTORY | DIGITAL TWIN

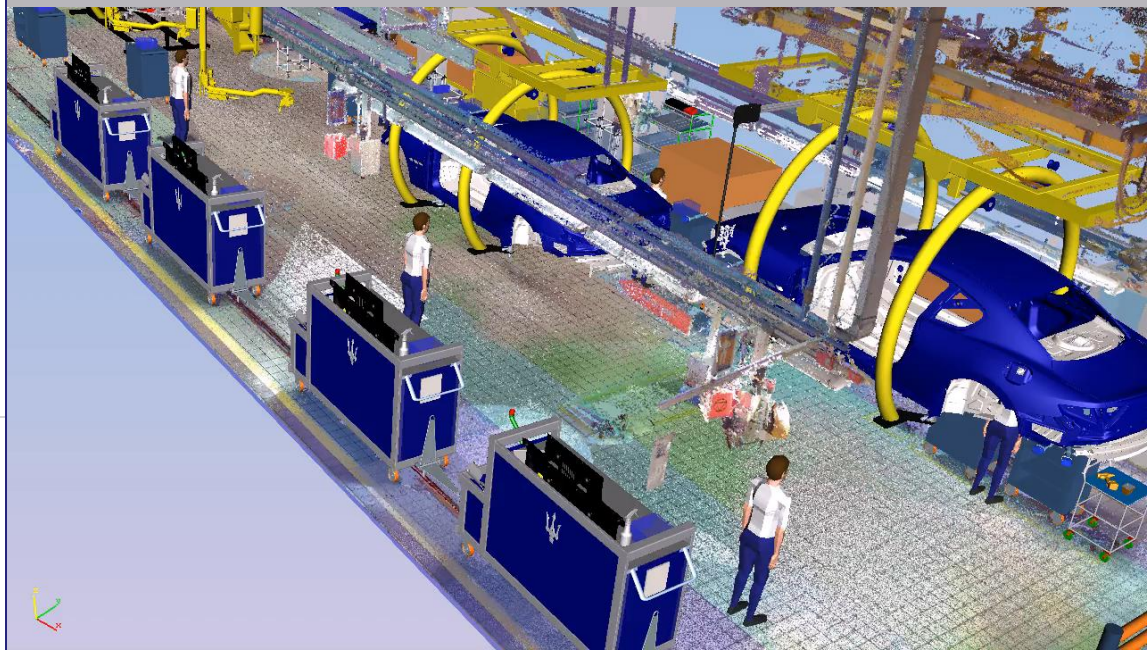
FROM CLOUD POINTS DETECTION

- Plant Detecting in 3D real scale
- Virtual Environment Realization
- Multiview mode Exploration

TO ANALYSIS AND PROJECT DEFINITION

- Support on Digital Model Realization
- Digital Twin, between the Real and Virtual Comparison

CLIENT Maserati STELLANTIS

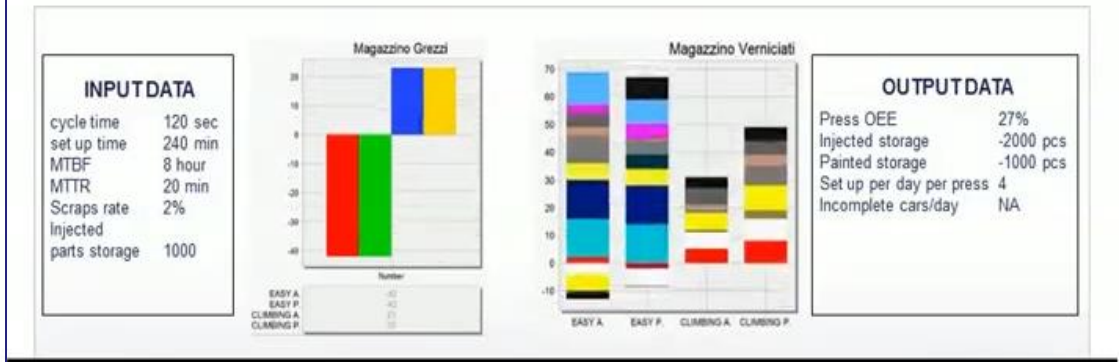


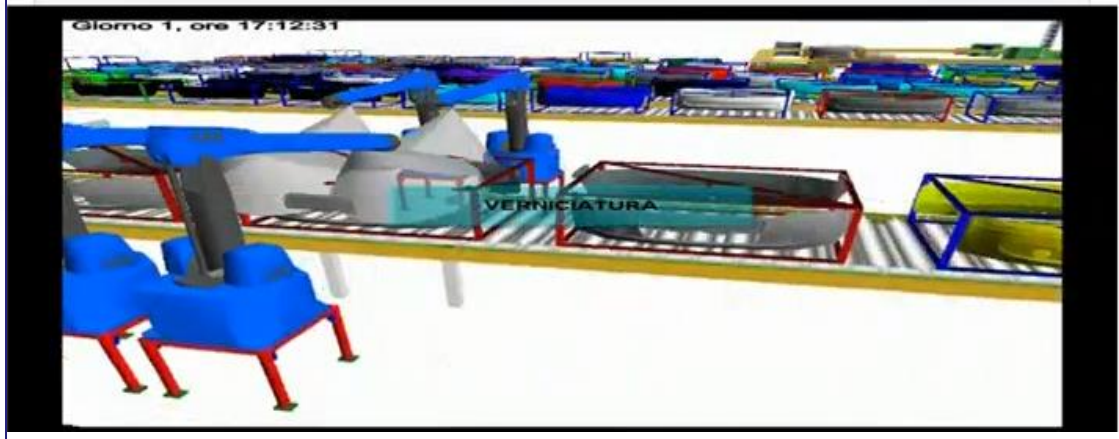
BUMPER WHAREHOUSE AND FLOW SIMULATION CASSINO

LOGISTIC SIMULATION

LOGISTIC SIMULATION FOR DISCRETE EVENTS

- Logistic digital model
- Material flow improvement
- Warehouse and Resources dimensioning





CLIENT STELLANTIS

ENGINEERING FOR

AEROSPACE

AIRCRAFT SUCCESS STORIES

mare® industrial

NGCTR-TD
NEXTGEN CIVIL TITLTROTOR

LEONARDO HELICOPTERS

P.180
SAT SMALL AIR TRANSPORT

PIAGGIO AEROSPACE

LPA
LARGE PASSENGER AIRCRAFT

AIRBUS

RACER
COMPOUND ROTOCRAFT

CIRA Italian Aerospace Research Centre

AIRBUS HELICOPTERS

UAM
LILIUM JET

LILIUM

Innovation IBK

UAM
EVE

EMBRAER-X

EVE

Innovation IBK

HYBRID
ELECTRIC REGIONAL AIRCRAFT (HER)

HERFUSE

LEONARDO MARE GROUP

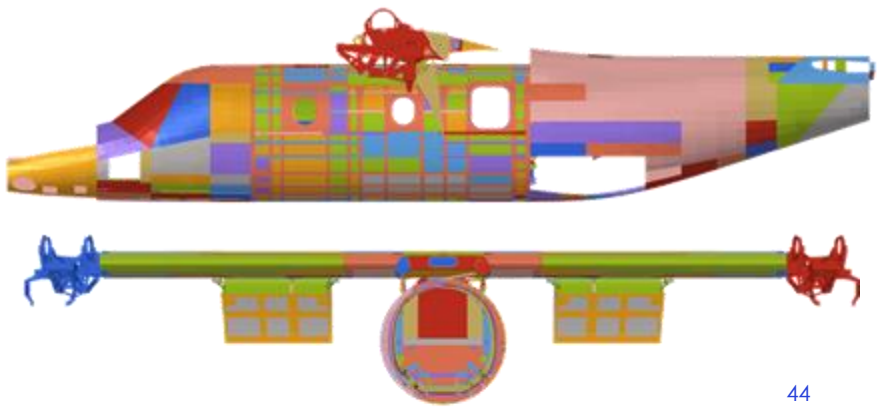
NEXT GEN CIVIL TILT ROTOR WING

AIRCRAFT STRUCTURES SUCCESS STORIES

- Design and Structural analysis of a highly innovative wing made of thermoplastic composites and characterized by a modular architecture to be easily adaptable to different kinds of the Next Generation of Rotorcraft by Leonardo Helicopters.

- Design for less assembly complexity and lower mass.
- A/C Crashworthiness.
- New numerical crash methodology.
- Pre-normative Certification Procedure

CLIENT LEONARDO HELICOPTERS



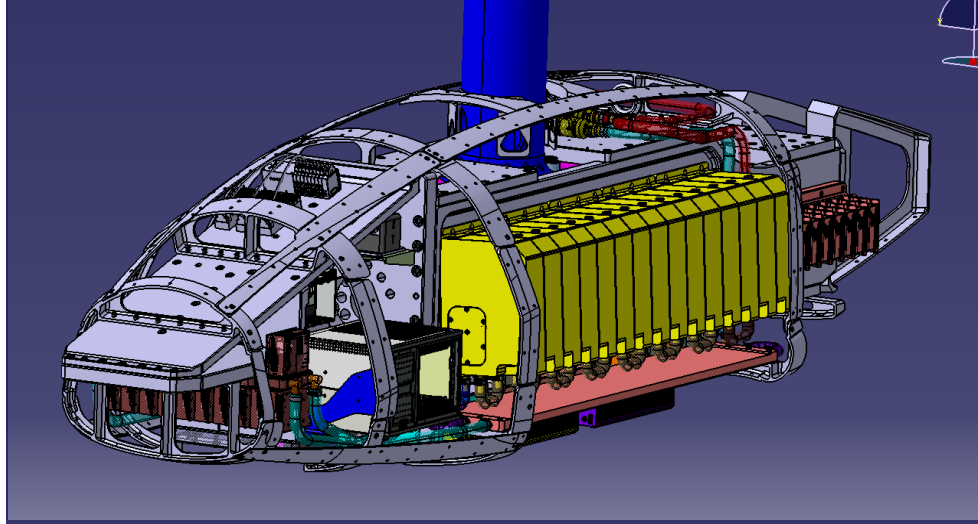
VTOL WTM

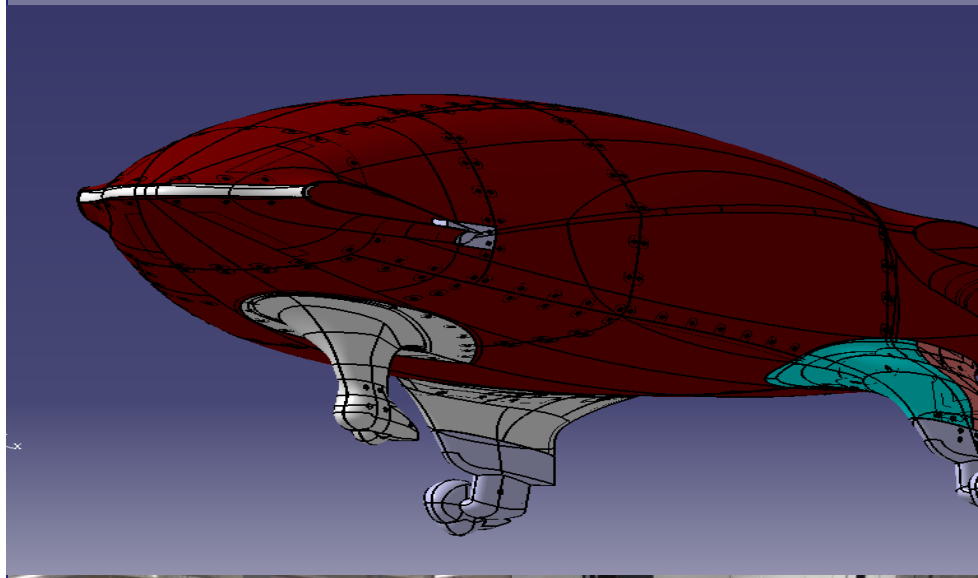
AIRCRAFT STRUCTURES SUCCESS STORIES

- Wing Tunnel Model Design and manufacturing

- Fuselage Structure
- Fuselage panels (Composite)
- Input and output board (3D printing).
- Landing gears

CLIENT LILIUM





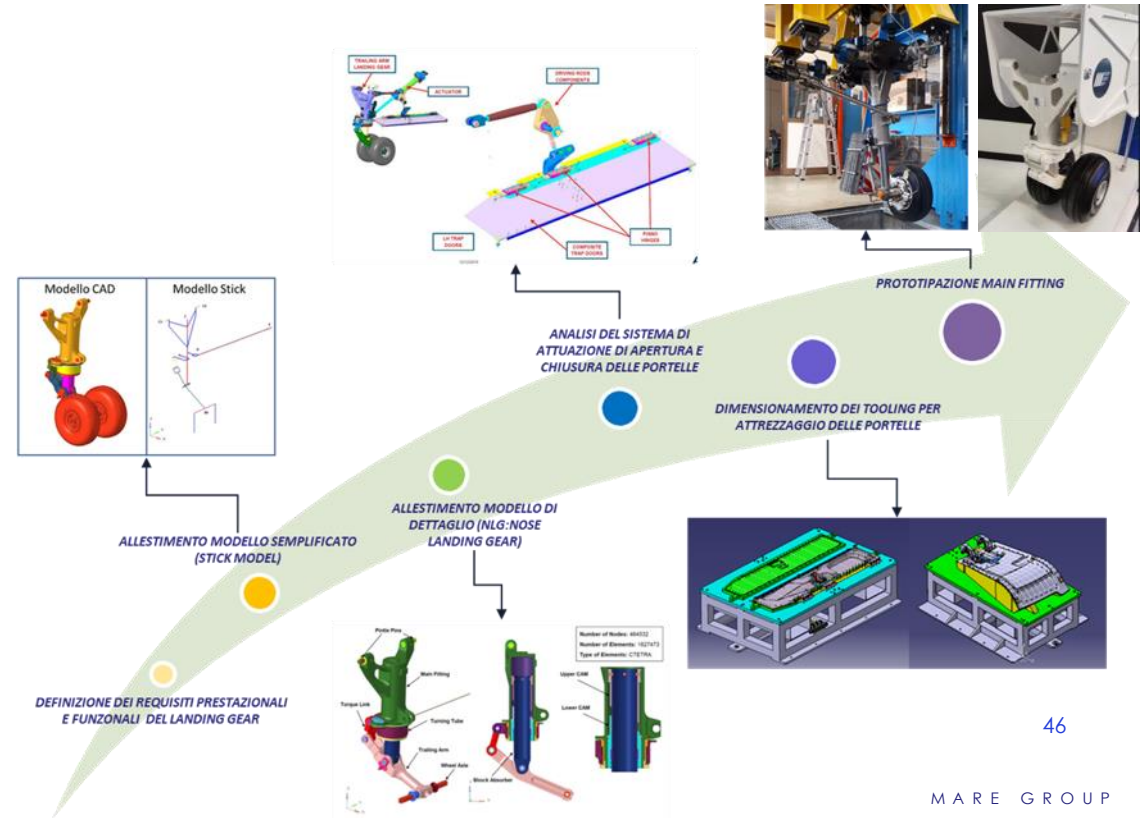
RACER LANDING GEAR

AIRCRAFT STRUCTURES SUCCESS STORIES

- Design and Structural analysis of an innovative Landing Gear integrated into the Rapid and Cost-Effective Rotorcraft (RACER) by Airbus Helicopters.

- **Structural parts optimization**
  with an eye on weight reduction.
- **Additive Manufacturing technology** combined with design,
  for further weight and scrap saving.
- **Unique actuation system**
  for hatches and landing gear.

CLIENT AIRBUS HELICOPTERS



GLOBAL COMBAT AIR PROGRAMME

FUEL SYSTEM

- 6th Generation Fighter is a multi-national collaborative project involving Italy, the United Kingdom and Japan, with the shared ambition of producing the next-generation fighter aircraft by 2035.
- The contract in question involves the development of Fuel Gauging with a highly accurate algorithm for calculating fuel quantity in tanks under any flight conditions.

- Definition of the system in terms of requirements and architecture EFGS (Enhanced Fuel Gauging System) & RAR (Receptacle Air Refueling)
- Virtual modeling of EFGS and EFGS & RAR architecture
- Development of EFGS code - EFGS System Mathematical Model
- Support activities for Rig RAR

CONSORZIUM

CLIENT LEONARDO BAE SYSTEMS MITSUBISHI HEAVY INDUSTRIES

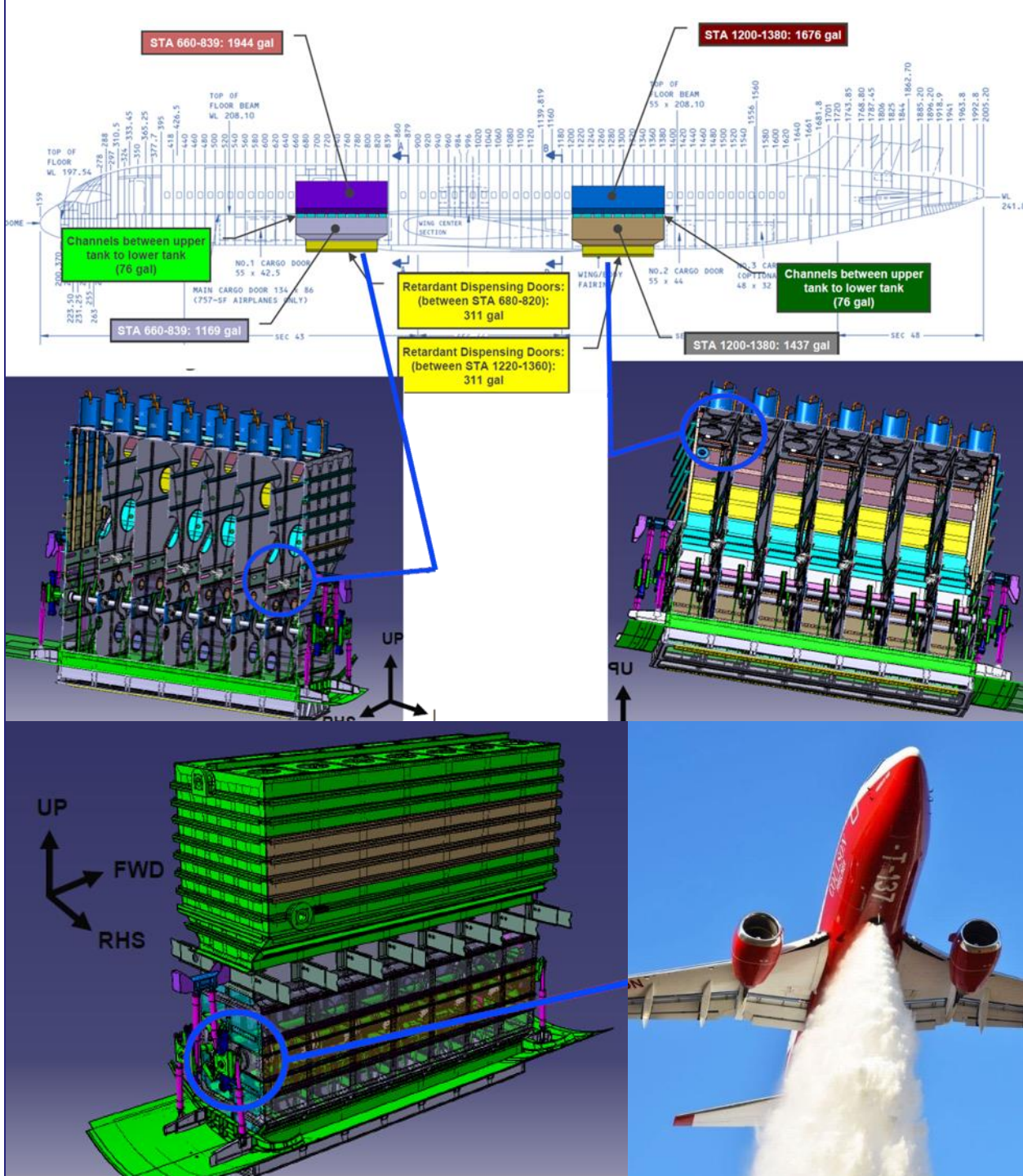
KINEMATIC SYSTEM FOR SYNCHRONIZED DOOR OPENING - BOEING 757

AIRCRAFT STRUCTURES SUCCESS STORIES

- The program encompasses Boeing 757-200 PAX conversion to a 757-200 Firefighting plane (757-200 P2T). The engineering solution must be designed to comply with the Federal Aviation Administration (FAA).

- Design and Functional Requirements
- Static Strength Analysis
- Fatigue and Damage Tolerance Analysis
- Kinematics Analysis
- Service Life, Reliability And Maintainability
- Tolerance Analysis
- Technical Support

CLIENT



INNOVATIVE FUEL STORAGE SYSTEM

AIRCRAFT STRUCTURES SUCCESS STORIES

- Design and Structural analysis of an innovative fuel storage system made of high performing solid foams and provided with an advanced integrated diagnostic system.

Tanks with

- innovative composite material
- impact resistance
- low weight
- Flexibility

Foams with

- high-strength
- low-density
- better crashworthy behavior

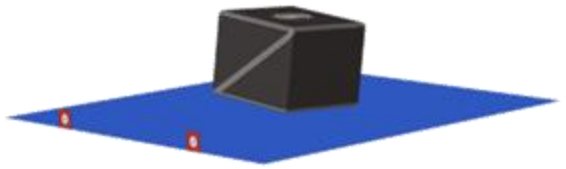
Drop Test Simulation Analysis:

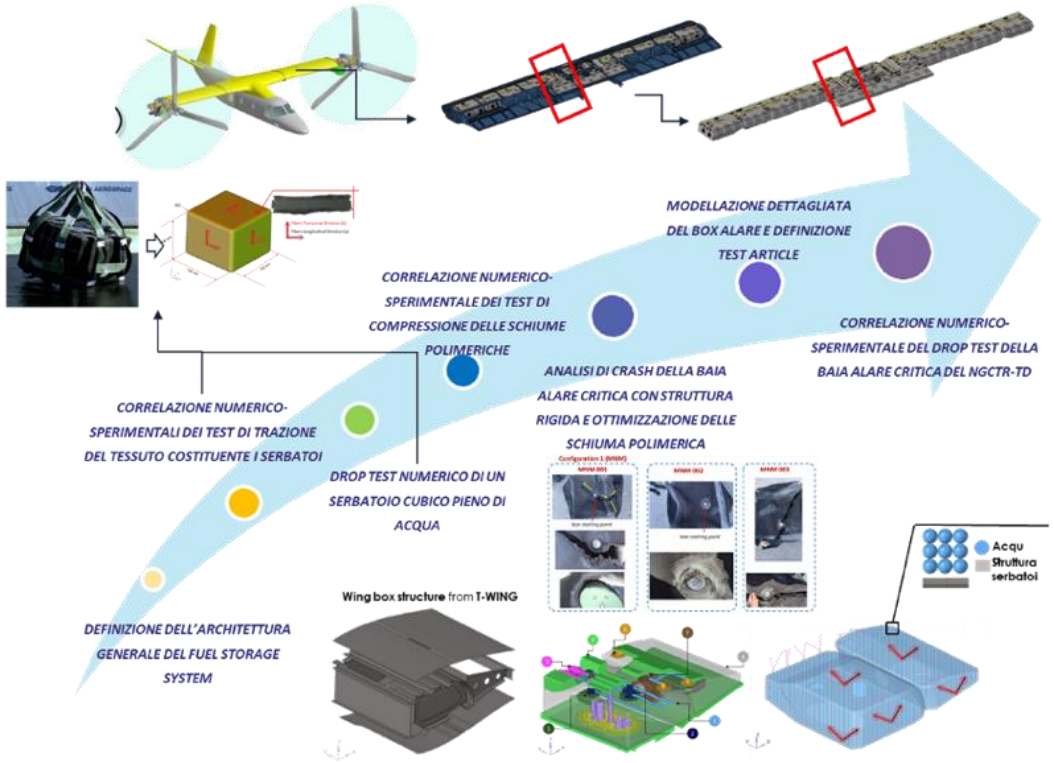
- Drop test simulation of fuel storage system with the integration of the surrounding structure.

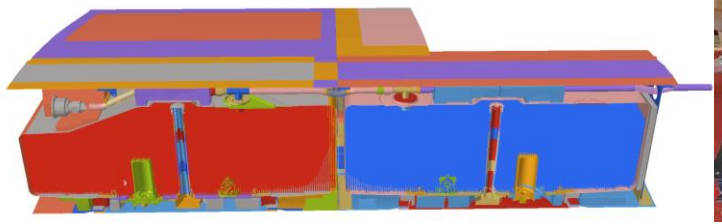
Additive Layer Manufacturing components, for the **weight reduction.**

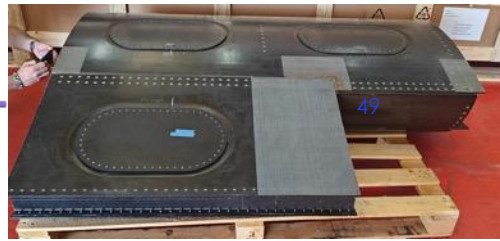
New numerical techniques for digital crashworthiness

PARTNER









BK117 – DROP TEST ANALYSIS

AIRCRAFT STRUCTURES SUCCESS STORIES

Design and structural analysis of the BK117 Fuel Storage System during an impact, focusing on interactions between the fuel tanks and the helicopter structure.

Material characterisation:

- Development of a flexible crashworthy fuel bladder wall model and correlation with experimental data

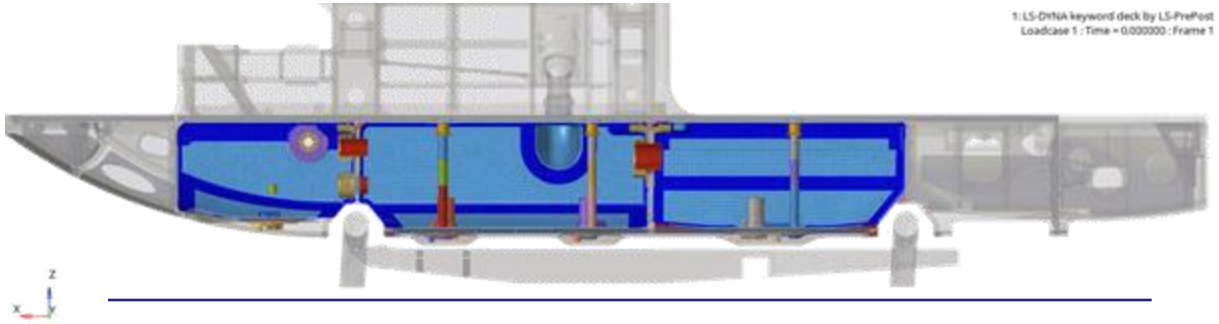
Full-Scale Drop test simulation:

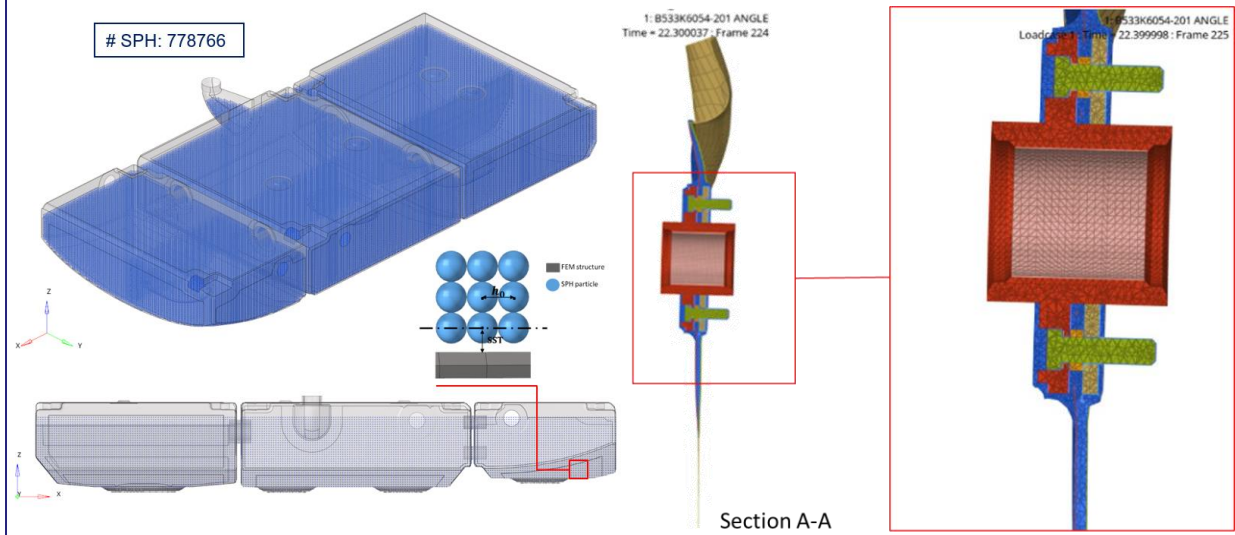
- Analysis of Fuel Storage System during crash impact scenario.
- Evaluation of fuel bladders to prevent fuel spillage due to composite failure.
- Monitor the integrity of the connection flanges, ventilation lines and equipment

PARTNER

AIRBUS HELICOPTERS

Kawasaki Powering your potential





INCEPTORS & INTERIORS DESIGN

VIRTUAL REALITY DESIGN SUCCESS STORIES

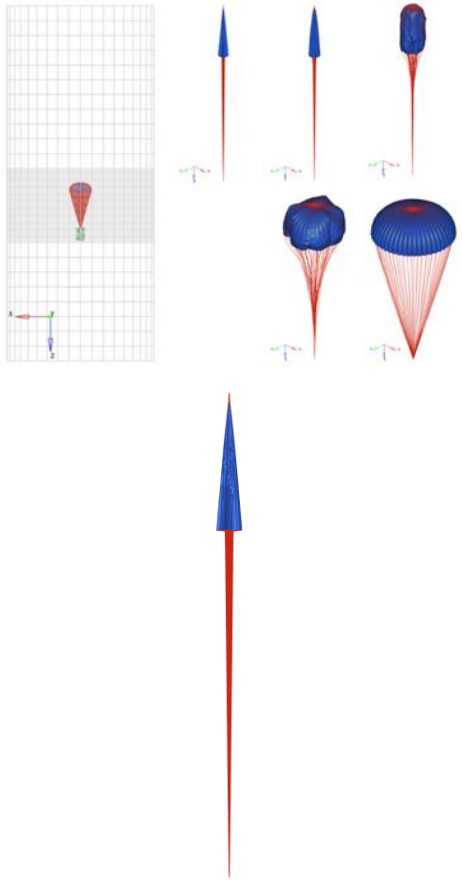
- Design of an innovative smart inceptor for the NGCTR by Leonardo Helicopters.

- Ergonomics simulation
- Workload evaluation
- Workspace evaluation
- Inceptor Design
- Galley
- Seats
- Trolley
- Waterjet

CLIENT LEONARDO HELICOPTERS

MASTERING PARACHUTE LOADING
(ESA PROPOSAL)
FOR CREW/CARGO CAPSULES RETURNING TO EARTH, EXPLORATION MISSIONS TO MARS

- Inflation simulation analyses to identify variation in line loads across the canopy;
- Identification of causes of variation in inflation load and isolation of sources of error / variability due to triggering;
- Riser loads shall be measured in addition to the line loads to allow post-test asymmetry analysis;
- Identification of causes of the variation of inflation loads, evaluate their relative influence, and isolate the sources of error / variability due to the triggering.



PARTNER ARESCOSMO SPA DEFENCE AND SPACE

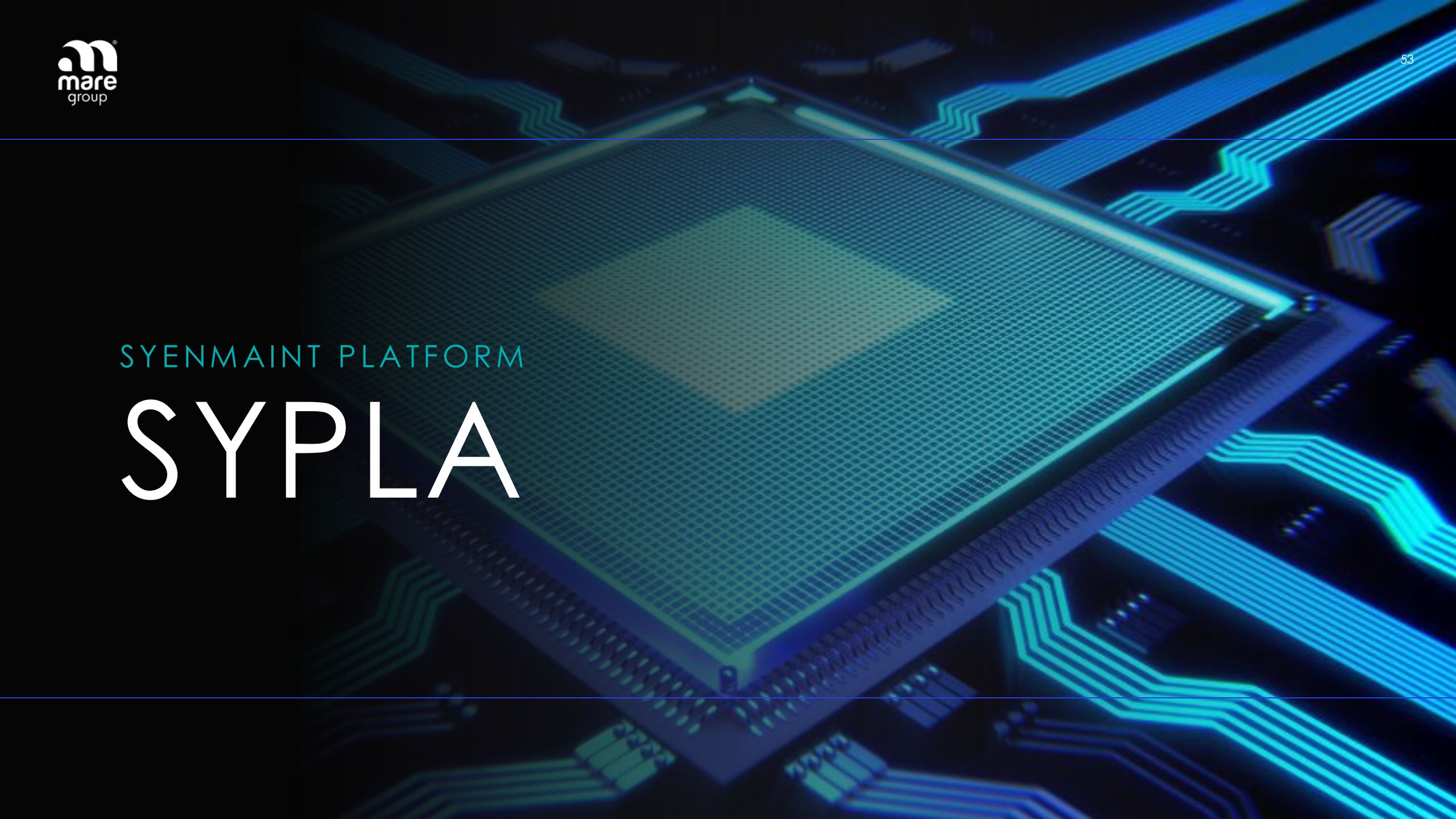
SPACE ENGINE FOR SMALL REUSABLE SPACE VECTOR
DESIGN OPTIMIZATION TO MANUFACTURING

- ALM technology identification
- Engine design optimization for manufacturing/cost effectiveness
- Supply chain identification

CLIENT SIDEREUS Audentes Fortuna Iuvat

SYENMAINT PLATFORM

SYPLA



SYPLA® – SYENMAINT® PLATFORM

Proprietary Technological Multi-Layer Platform for Asset Monitoring and Predictive Maintenance

- **Layer 1:** smart sensors & energy harvesting
- **Layer 2:** hardware
- **Layer 3:** firmware
- **Layer 4:** software

SYENMAINT PLATFORM

SYPLA

RAIL APPLICATIONS, PREDICTIVE MAINTENANCE OF ROLLING STOCKS & RAILWAY INFRASTRUCTURE

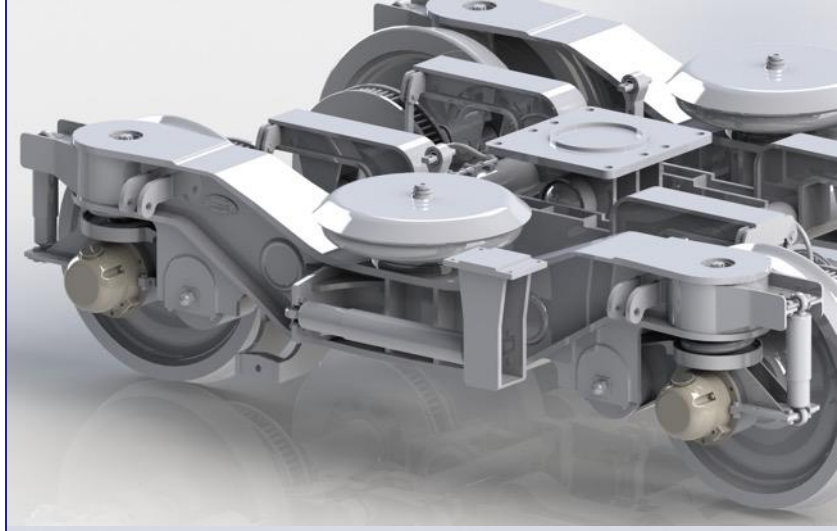
The SYPLA-RAIL Platform allows for the integrated management of diagnostics and maintenance of rolling stock and infrastructure anomalies, detected by monitoring vehicle dynamics. Using the SAX System (SYPLA SMART AXLE BOX), self-powered and wireless, easily applied to the axleboxes of railway bogies, it processes real-time and detects anomalies in the axlebox, bogie, rail and track.

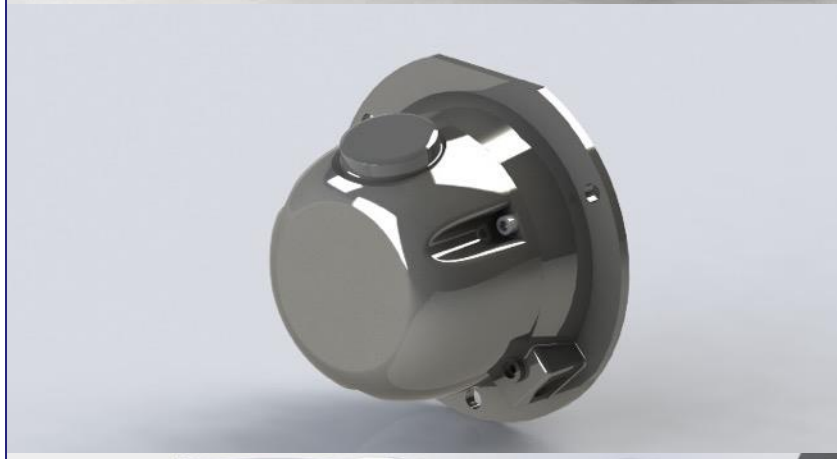
The data sent to the cloud is also processed in post-processing, through historical superposition, for the identification of degradation trends (pattern-recognition) useful for fault prediction.

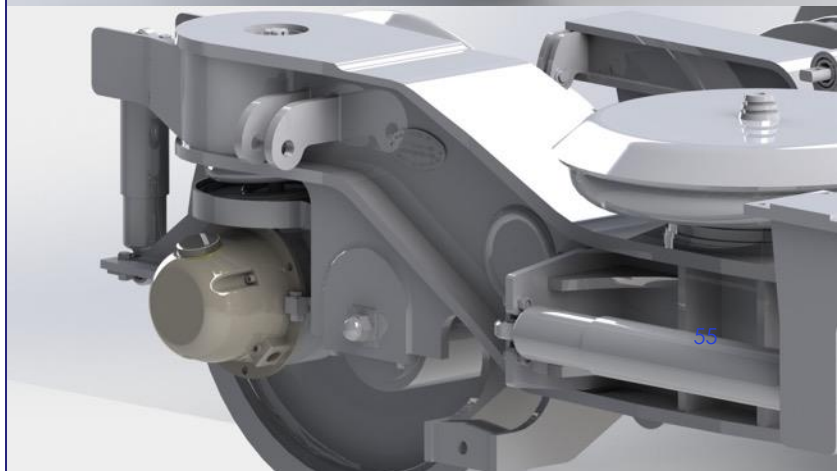
- Accelerometry, Gyroscopy, Inclinometry, Temperature, Acoustics
- Relative and absolute distance travelled, instant speed, GPS position

PARTNERS

CLIENT







SYPLA AEROSPACE

PREDICTIVE MAINTENANCE IN AEROSPACE FUSELAGES STRUCTURAL HEALTH MONITORING

Mare Group participates in the development of Leonardo's hybrid electric regional aircraft as part of the HERFUSE project (Joint-Undertaking Clean Aviation, Grant Agreement n° 101140567), where the use of SYPLA® AEROSPACE, for the structural monitoring of the fuselages, allows define and optimize the architecture of aircraft health management systems.

SYPLA® AEROSPACE is an integrated asset monitoring and predictive maintenance with management of the A/C digital twin through high computing performances for: Internet of Things, Big Data Analytics, Artificial Intelligence, maintenance with extended reality support. System for the optimized management of the product life cycle, through the acquisition of the following parameters by means of unique/single platform:

- Structural Health Monitoring
- Vibration, acoustics & ultrasound
- Temperature
- Flight parameters

ADOPTERS/PARTNERS AIRBUS LEONARDO AIRBUS DEFENCE & SPACE

PROJECT HERFUSE CLEAN AVIATION

STRATEGIC MOVES

ACTION	APPLIED ENGINEERING	DIGITAL SERVICES	TECHNOLOGY PLATFORMS
ACQUISITION OF TARGET COMPANIES	✓	✓	✓
STRENGTHENING IN FOCUS SECTORS	✓		
APPLIED AI FOR BUILDING MANAGEMENT		✓	
TECHNOLOGY INTEGRATION	✓	✓	✓
NEW PRODUCTS AND SERVICES			✓
INTERNATIONALIZATION	✓	✓	✓

STRATEGIC MOVES: Dec'24

ACQUISITION OF TARGET COMPANIES, STRENGTHENING IN FOCUS SECTORS, TECHNOLOGY INTEGRATION

ADVANCED ENGINEERING SOLUTIONS

MARE GROUP, TOGETHER WITH A SPECIALIZED PARTNER: POWERFLEX.

Powerflex srl has been operating since 1996 in various sectors, including Defense Engineering, Avionics, Aerospace, Naval, and Railway industries. The company offers comprehensive solutions to meet logistical needs for lightweight management of sensitive electronic equipment, along with the design and implementation of systems and devices for seismic protection.

Starting with the production of wire rope dampers and mechanisms for isolating electronic and electromechanical devices, the company has significantly enhanced its in-house research and development, design, production, and testing capabilities. This expansion reflects a dynamic and innovation-driven approach, broadening its scope of interest.

3D CAD DESIGN

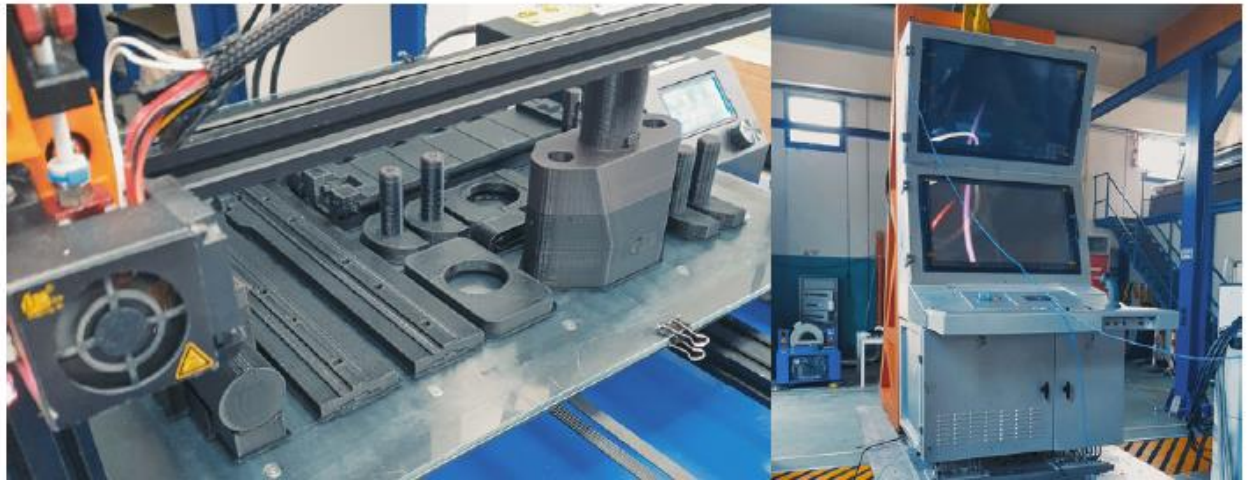
Virtual electromechanical prototypes are designed using SolidWorks® and Ansys, ensuring compliance with performance and safety requirements. Designs are iteratively reviewed and validated through physical prototype testing in the Environmental Testing Laboratory.

MODELLING AND ANALYSIS

The POWERFLEX engineering department provides analysis services using the finite element method (FEM) calculation methodology.

TESTING & QUALIFICATIONS

Powerflex supports clients in analyzing structural dynamics and offers consultancy for environmental qualifications. Testing is conducted in-house, at partner labs, or on-site, following civil and military standards.



Mare Group S.p.A.

Capitale sociale € 3.000.000,00 i.v.

P.IVA IT 07784980638

Via ex Aeroporto s.n.c.
c/o Consorzio Il Sole Lotto XI
80038 Pomigliano d'Arco (NA)

maregroup.it
info@maregroup.it
Tel. +39 081 803 6677